Compilation of Triple Site Outreach Materials
July 2014 through August 2018

Date	Description of Triple Site Letters/Correspondence
July 2014	Letter - Indoor Air Sampling Update, City of Sunnyvale
August 2014	School Cover Letter
	School Sampling Update (First Fact Sheet)
	NBC online article, "Sunnyvale Schools, Homes Sit on Toxic Groundwater: EPA"
December 2014	Door-to-Door Cover Letter
	Cover Letter offering sampling
	Cover Letter not offering sampling
	School Meeting Notice
	Community Fact Sheet
	Community Meeting Handouts/Posters
March 2015	School Letter for Children's Creative Learning Center
	School Letter for The King's Academy
	School Letter for Rainbow Montessori Child Development Center
	School Letter for San Miguel Elementary School
April 2015	Community Meeting Minutes – Rainbow Montessori School
May 2015	Second Community Meeting
June 2015	Community Meeting Minutes / Handouts – San Miguel Elementary School
	Online article, "EPA shares findings on vapor intrusion," by San Jose Mercury News
	Door-to-Door Cover Letter
	Cover Letter offering sampling
	Cover Letter not offering sampling
	2nd Indoor Air Sampling Request (Second Fact Sheet)
August 2015	Example Letter - Home Indoor Air Testing Results
September 2015	School Letter Update for Rainbow Montessori Child Development Center
	Cover Letter offering sampling
	Door-to-Door Cover Letter
October 2015	Center for Public Environmental Oversight article, "Building Trust at the Triple Site, Sunnyvale, California"
November 2015	Meeting Minutes – City of Sunnyvale Update
January 2016	School Fact Sheet Cover Letter to 4 schools
	Sample Mitigation Plan Package for Property Owner
March 2016	School Letter Update to The King's Academy
	High Risk Letter
	The King's Academy email dated March 18, 2016
April 2016	Community Indoor Air Update (Third Fact Sheet)
	Enforcement Letter (hard version)
August 2016	EPA Update Message for The King's Academy (email dated Aug. 18, 2016)
	Enforcement Letter (soft version)
September 2016	San Miguel Neighborhood Community Letter
	Community Category 2 Mailing and Door-to-Door Outreach Cover Letter
	Example No-Further-Action Letter
October 2016	San Miguel Elementary School Letter
	Door-to-Door Residents Outreach Cover Letter
November 2016	Community Category 1 Mailing Cover Letter
	Sampling Reminder Postcard
	E-mail from City of Sunnyvale Regarding the Status of Vapor Intrusion Work in North Sunnyvale (email dated November 28, 2016)
December 2016	EPA Update for The King's Academy (email dated Dec. 15, 2016)
March 2017	EPA Update for Rainbow Montessori Child Development Center
May 2017	Mitigation Recommendation Letter
	Public High Risk Letter
June 2017	KQED Science article, "Silicon Valley's Toxic Past Haunts Sunnyvale Neighborhood"
August 2018	Mitigation Access Agreement (in English, Chinese, and Spanish)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

July 31, 2014

Deanna J. Santana
City Manager
456 West Olive Avenue
Sunnyvale, CA 95086

Re: Indoor Air Sampling Update

Dear Ms. Santana,

As requested, here is an update regarding indoor air sampling being overseen by the Environmental Protection Agency (EPA) and the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) at residential and business properties in Sunnyvale. These properties are located above groundwater plumes that were contaminated with trichloroethene (TCE) many years ago due to business practices at the time. TCE was a commonly used solvent and is now a known human carcinogen. *It is important to note that Sunnyvale's drinking water is not affected by this groundwater contamination.*

EPA is using newly developed and more stringent testing strategies to better determine the extent of vapor intrusion (VI) of TCE. VI is when TCE and other vapors in the groundwater come up through the soil and accumulate in buildings located above the contamination. The testing is designed to determine if there are higher than allowed levels of TCE in these buildings. If so, appropriate mitigation measures are taken, which may include sealing conduits where vapors are entering buildings, improving ventilation, installing air purifiers or installing sub-slab depressurization systems. In general, the air monitoring devices used in residences are small and unobtrusive; larger, basketball-sized canisters are typically used in commercial settings.

There are five testing sites in Sunnyvale: 1) Intersil/Siemens, 2) National Semiconductor, 3) AMD 1165/1175 Arques (also known as Monolithic Memories), 4) AMD 915 and 5) the "Triple" Site (AMD 901/902 / TRW Microwave / Philips). EPA and the Regional Water Board have contacted the companies responsible for cleaning up the groundwater plumes and have been working with them since around 2009 to develop workplans that address VI testing requirements and to oversee the public notification process and testing.

Main Findings in Sunnyvale to Date:

- The majority of the data collected from residences in the last four months has shown no evidence of VI. One home out of nine tested in one neighborhood had some elevated TCE levels but EPA believes this was related to products being stored or used on the premises. That homeowner declined any further involvement with the study; however, EPA followed up with official correspondence that advises the homeowner of their right to request additional sampling in the future, if they change their mind.
- The commercial testing has shown mixed results so far. Some buildings do not appear to be affected by VI. Others have been impacted and EPA is working cooperatively with the responsible parties to expeditiously and appropriately address the VI wherever impacts are found.
- In May 2014, Philips, one of the responsible parties for the Triple Site, submitted a workplan for investigating VI in the residential neighborhood next to the site. This is the neighborhood around and north of East Duane and Britton Avenues, which includes four schools. This area is also identified in the official cleanup decision document for the site as the "Offsite Operable Unit" or OOU. EPA has determined that

Philips' workplan does not meet all of the requirements for evaluating VI and the agency is evaluating options on how to proceed. This is not too atypical of other sites where EPA and the State Regional Water Quality Board have needed to work more closely with responsible parties to negotiate an acceptable workplan.

Site-Specific Update:

Intersil/Siemens (Site is in Cupertino with groundwater plume extending into Sunnyvale)

- Twenty-five homes in the neighborhood of Homestead Road, Swallow Drive, Quail Avenue and Lorne Way were offered testing. Nine homes along Homestead Road (between Quail and Swallow) accepted testing and were sampled with two-week samplers.
- All residents were offered two rounds of testing (to capture any potential variation that may occur over time), and most accepted the second round.
- EPA has detected no VI in any of the homes sampled (with the one exception discussed in *Main Findings*). In August, a second round of sampling will be conducted at two remaining homes in the test area.
- EPA detected low-level VI in certain commercial buildings tested in Cupertino, but the data is well below action levels.

National Semiconductor (Site is in Santa Clara with groundwater plume extending into Sunnyvale)

- Sampling and mitigation in approximately 20 commercial buildings is ongoing, with mixed results (noted in *Main Findings*).
- The responsible party, Texas Instruments, is currently in the process of attempting to obtain access for testing from certain remaining Sunnyvale commercial business owners in the study area.

AMD 1165/1175 Arques (Monolithic Memories)

- The responsible party, AMD, is conducting investigation and mitigation work at one commercial building where floor drains in a restroom have been identified as the major pathway for VI into the building.

Triple Site (AMD 901/902) & Nearby AMD 915 Site

- The responsible party, AMD, submitted reports to EPA that evaluate the indoor air sampling conducted in the past at the on-site commercial buildings. EPA is currently reviewing the reports to ensure that the sampling previously conducted complies with its updated testing guidelines. If not, EPA will work with the Regional Water Board to request additional sampling work.

Triple Site (TRW Microwave)

- The one on-site building is unfinished and without a tenant. Indoor air sampling shows the building to be impacted by VI, and mitigation work is in progress by Northrop Grumman, the responsible party, which will be completed prior to any new tenant occupying the building.

Triple Site (Philips)

- This site includes a residential neighborhood in the vicinity of Duane Avenue and areas to the north, with over 100 single-family and multi-family residences and four schools – The King's Academy (a high school), Rainbow Montessori Child Development Center (an elementary school), San Miguel Elementary School, and Children's Creative Learning Center (a daycare and preschool).
- The responsible party, Philips, submitted a workplan in May 2014 for investigating VI, which EPA is currently reviewing (noted in *Main Findings*).
- The Montessori school has been regularly tested by Philips on an annual basis for the past ten years; recent indoor air sampling results from that location continue to fall within EPA's health protective range for children.

Looking Ahead:
In the months ahead, EPA and the Regional Water Board will work with all of the Triple Site responsible parties to revise their workplan, and expects to receive additional workplans for the National Semiconductor commercial investigation as they gain access to additional buildings. Sampling and mitigation continues and it is anticipated that work will continue into 2015. EPA also will continue to keep City staff apprised of its progress.

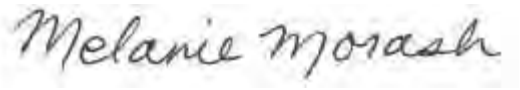
Background Information:

www.epa.gov/region9/cleanup/california.html

This webpage contains links to each site. Note that the Intersil/Siemens site link is listed under Cupertino and the National Semiconductor site is listed under Santa Clara. Each EPA website also has a link on the top, right-hand corner of the site to the Regional Water Board's websites.

Thank you for the opportunity to provide this update. Please do not hesitate to contact me at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have any questions.

Sincerely,



Melanie Morash, Remedial Project Manager
Superfund Division
EPA Region 9

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

August 2014

San Miguel Neighborhood School Community
Sunnyvale, California

Dear Parents and Community Members:

Attached to this letter is a fact sheet with information about an environmental investigation being conducted by the U.S. Environmental Protection Agency (EPA) at schools and residences in this part of Sunnyvale.

This fall and winter, EPA plans to conduct indoor air sampling at schools and residences in the Duane/San Miguel Avenue neighborhood to investigate the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

The majority of the data EPA has collected from Sunnyvale residences in the last year has shown no evidence of vapor intrusion, and sampling at some school buildings (the Montessori School buildings, which are over the highest concentrations in groundwater) has shown that levels of trichloroethene (TCE) – the main chemical we are concerned about in this investigation – are very low, and protective of children's health.

However, EPA has developed a comprehensive testing program for vapor intrusion and we plan to conduct additional sampling this fall and winter to ensure that levels of TCE in buildings are protective. We also plan to hold a community meeting this fall and will distribute additional fact sheets once we have the results of each testing event.

Please note that your drinking water is not affected by this contamination. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. EPA is also developing a website for the project: www.epa.gov/region9/triplesite which will have additional information.

Sincerely,

Melanie Morash

Melanie Morash, Superfund Project Manager

EPA School Sampling Update

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • August 2014

Triple Site, Sunnyvale, California

The U.S. Environmental Protection Agency (EPA) has been investigating the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air) at schools and residences in the Duane/San Miguel Avenue Neighborhood. Indoor air sampling has been conducted every year at some school buildings, and all recent results continue to meet EPA's requirements for protecting children's health. However, EPA recently strengthened its protective levels for trichloroethene (TCE) and has developed a more comprehensive testing approach. While we don't expect to find any levels of concern, EPA will do more air sampling at schools and residences in the neighborhood this fall and winter to make sure that the new, lower levels for TCE are not being exceeded.

TCE and Vapor Intrusion

The main chemical of concern in our investigation in this area is TCE. TCE is a type of volatile organic chemical (VOC) which can move as vapors from groundwater through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels of VOCs are high enough and prolonged enough, it may create a health risk.

TCE is present in the groundwater due to historical semiconductor and other electronics manufacturing operations from the early years of Silicon Valley (dating back to the 1960s). Since the 1980s, the companies responsible for the environmental cleanup have been conducting activities to contain and clean up TCE in the shallow groundwater.

What Has Already Been Done?

Indoor air sampling has already been conducted at the Montessori school buildings on Duane Avenue because these buildings are over the highest concentration in groundwater. Results from this testing show that levels of TCE are very low, and protective of children's health. The good news so far is that air testing at homes in another Sunnyvale neighborhood this past year (for a similar TCE cleanup site) showed no evidence of vapor intrusion.

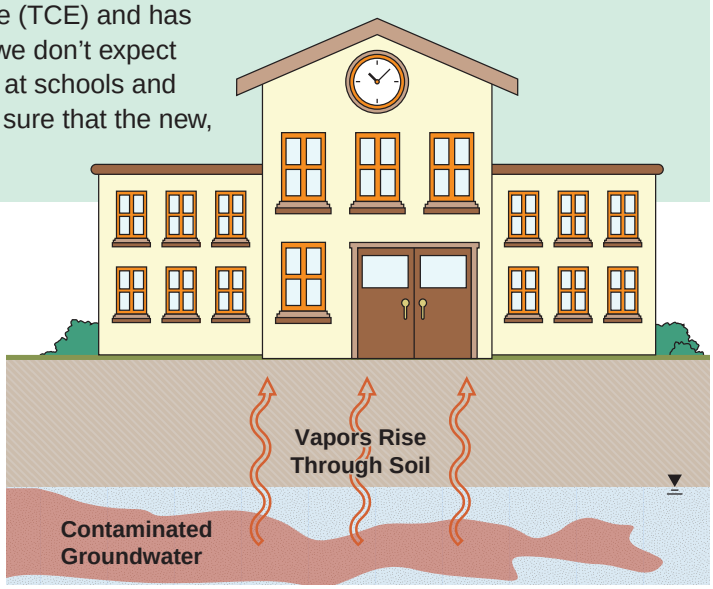
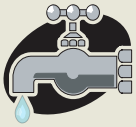


Figure 1: Vapor intrusion into a building

Why Sample Again?

This past year EPA strengthened its protective levels for TCE, due to new information about potential cancer risks related to TCE exposure. New levels that would warrant an accelerated EPA response were also developed for short-term risks, including liver and kidney effects and organ problems in babies whose mothers were exposed during the first trimester of pregnancy.

EPA has learned more about how vapor intrusion can vary throughout the year. This is why EPA is planning to sample at schools and residences this fall and winter to confirm that the new, lower levels for TCE exposure are not being exceeded.



Note: Your drinking water is not affected by this contamination. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

The "Triple Site"

Informally known by the collective term "Triple Site", the site includes three groundwater TCE sites – the Advanced Micro Devices 901/902 Thompson Place Superfund Site (AMD 901/902 Site), the Philips (formerly Signetics) Site (Philips Site), and the TRW Microwave Superfund Site (TRW Site).

The Triple Site also includes the area of the neighborhood outside these facilities' property boundaries, which has been impacted by TCE-containing groundwater from the three source sites. This area includes the neighborhood around Duane/San Miguel Avenue to just past Highway 101 to the north, and between the Sunnyvale East Drainage Channel on the west and Santa Paula Avenue on the east (see map). Concentrations of TCE in the shallow groundwater in this part of the neighborhood are elevated above the acceptable level of 5 micrograms per liter (ug/L).

What Happens Next?

EPA will work closely with school officials to schedule testing outside of school hours. Our sampling involves placing a sampling device in classrooms that takes in air over an extended period (for example, 10 to 24 hours). EPA will notify the school community with a factsheet explaining the results within a few weeks after the initial testing. Any unacceptable findings will be promptly addressed, for example, by identifying and sealing areas where vapors may be entering the buildings or by designing and installing mitigation systems in affected buildings.

For More Information

Please contact us for additional information:

Melanie Morash
EPA Project Manager
(415) 972-3050
morash.melanie@epa.gov

Alejandro Diaz
EPA Community
Involvement Coordinator
(415) 972-3242
diaz.alejandro@epa.gov

Visit EPA's website for more information on the Triple Site:
www.epa.gov/region9/triplesite

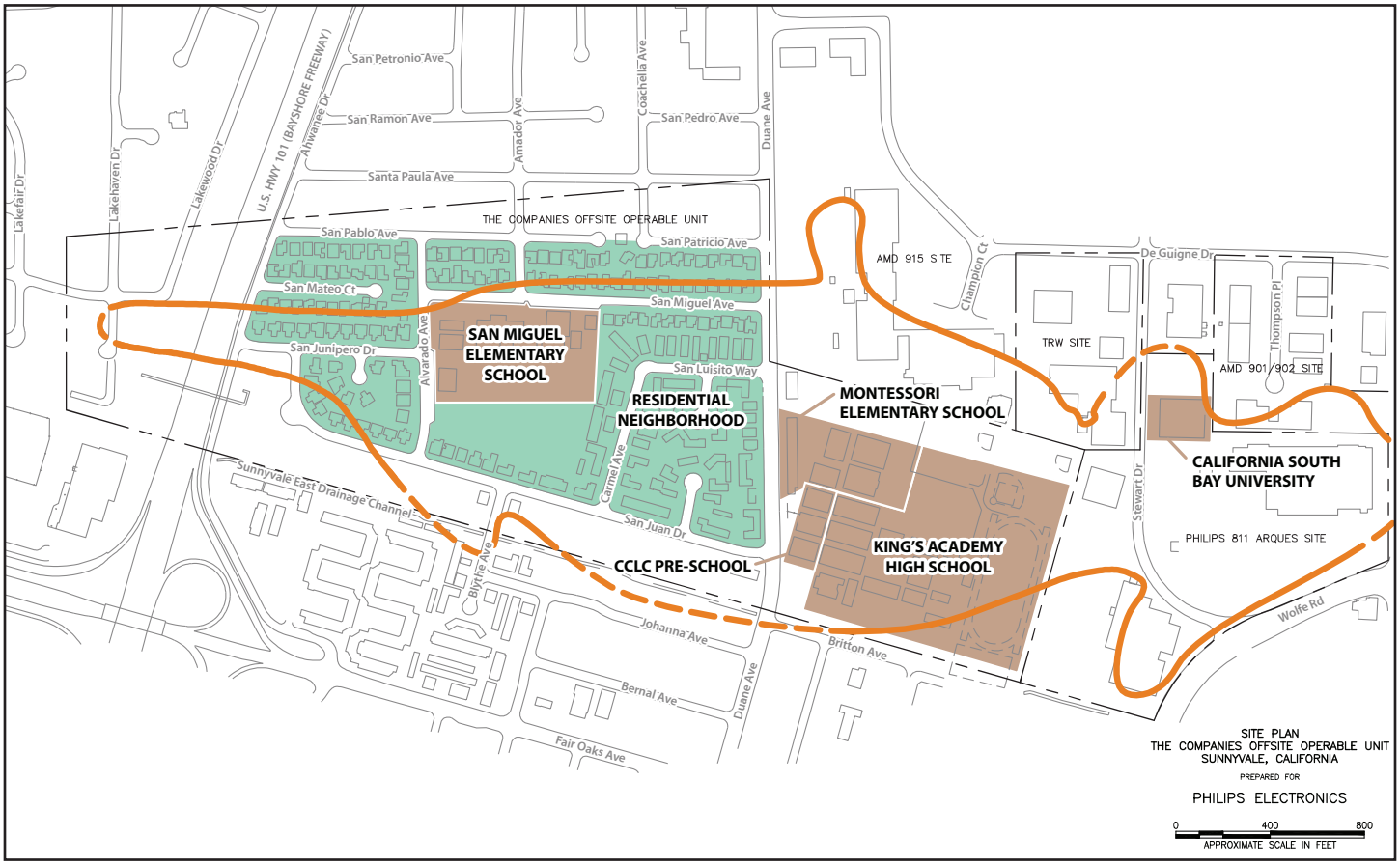


Figure 2: Approximate extent of TCE contamination in shallow groundwater

Sunnyvale Schools, Homes Sit on Toxic Groundwater: EPA

By Michelle Roberts
NBC Bay Area News (CA)
August 12, 2014

The Environmental Protection Agency is examining homes and schools in Sunnyvale after toxic groundwater was discovered in the area.

Tech companies Advanced Micro Devices Inc, Northrop Grumman Systems Corporation and Philips are believed to be responsible for the pollution, EPA officials said.

"Unfortunately, some of the companies are dragging their feet and the public needs to get involved to make sure they do the right thing," said Lenny Siegel, Center for Public Environmental Oversight's executive director.

The chemicals have been underground for up to 30 years, officials said. The groundwater in the affected area tested positive for a chemical compound called TCE, a solvent left behind by the electronic manufacturers.

...

For the entire story, see

http://www.nbcbayarea.com/news/local/Sunnyvale-Schools-Homes-Sit-on-Toxic-Groundwater-270995341.html

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 2014

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

Attached to this letter is a fact sheet with information about an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale, associated with three sites informally known by the collective term "Triple Site." The purpose of the study is to investigate the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

As a precaution, EPA would like to test the air inside your home to determine if there is a buildup of trichloroethene (TCE) – the main chemical we are concerned about in this investigation. There is no cost to you for this testing, which we would like to do in the next few weeks.

EPA's Sampling Access Agreement is also attached to this letter. **Please sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address:** Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105.

The majority of the data EPA has collected from Sunnyvale residences in the last year has shown no evidence of vapor intrusion, and sampling at some school buildings (the Montessori School buildings on Duane Avenue, which are over the highest concentrations in groundwater) has shown that levels of TCE are very low, and protective of children's health. However, EPA has developed a comprehensive testing program for vapor intrusion and we are doing additional sampling to ensure that levels of TCE in buildings are protective.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

The process for testing for TCE in indoor air involves placing a sampling device in your home and in the crawlspace beneath the home over a 24-hour to 2-week period. EPA's goal is to conduct two sampling events spaced several weeks apart and can work with you on your preferred sampling time. EPA will notify you of the results within a few weeks after the testing. If levels exceed EPA's health-based screening levels, we will present options to you as to how to proceed.

If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 2014

Revise to mail merge/include recipient name, address here

_____

Re: Access for Indoor Air Sampling
Vapor Intrusion Investigation
Sunnyvale, California

To Whom It May Concern:

As you may already know, the U.S. Environmental Protection Agency (EPA) is overseeing a study in Sunnyvale to determine whether there is a potential for vapors from contaminated groundwater to come up through the soil and accumulate in overlying buildings – a process called "vapor intrusion." Please be aware that your drinking water does not come from groundwater in this area. Your water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

As part of this investigation, EPA is seeking access to your property at the address indicated above in Sunnyvale, California.

EPA is also holding a community meeting about this project on Wednesday, December 10th from 6:30 – 8:00 p.m., in the Multipurpose Room at San Miguel Elementary School – 777 San Miguel Avenue in Sunnyvale. You are invited to attend and learn more about the investigation, as well as meet the EPA staff who will be involved in the sampling.

As background, EPA recently lowered (made more conservative) its levels for tricholorethene (aka "TCE") considered protective of human health. Because vapor intrusion can vary throughout the year, however, we would like to sample during the colder months (December through February) when there is a greater potential for vapor intrusion in order to confirm that the new, lower levels for TCE are not being exceeded.

The process for testing for TCE in indoor air involves placing a sampling device in your home and in the crawlspace beneath the home that takes in air over a 24-hour to 2-week period. EPA's goal is to conduct two sampling events spaced several weeks apart and can work with you on your preferred sampling time. A sampling technician will then pick up the device and send it to a laboratory for analysis.

EPA will notify you of the results within a few weeks after completing the sampling. If TCE is found in your home at levels exceeding EPA's health protective screening levels, further measures would be taken with your permission (such as conducting an inventory of chemicals stored in your home and possibly a second round of sampling) to determine the source. Once the source of the TCE is determined, EPA will present options to you as to how to proceed and address the issue.

Access for Indoor Air Sampling
Vapor Intrusion Investigation
Sunnyvale, California

To participate in EPA's sampling, please refrain from using common sources of TCE during the sampling period, such as metal degreasers, adhesives, rug cleaners, paint and varnish removers, spot removers, typewriter correction fluid, or certain automotive products. Please also postpone dry-cleaning or wearing recently dry-cleaned clothes until after the sampling is complete.

EPA's Sampling Access Agreement is enclosed for your review and approval. **Please sign the attached Sampling Access Agreement and return it to us as soon as possible.** If at any time you wish to revoke your consent or request more time to consider, you are always free to do so.

Please complete, sign, and return the enclosed Sampling Access Agreement to:

Melanie Morash
US EPA Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, California 94105

Please contact me within the next two weeks so that I can answer your questions and arrange for the sampling. You may call me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov.

If you have any other questions, please let me know. Note that more information is available on the internet at www.epa.gov/region9/cleanup/california.html.

Thank you in advance for your cooperation.

Sincerely,

Melanie Morash

Melanie Morash
Project Manager
US EPA Region 9

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 2014

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

Attached to this letter is a fact sheet with information about an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale, associated with three sites informally known by the collective term "Triple Site." The purpose of the study is to investigate the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

EPA is also holding a community meeting about this project on Wednesday, December 10th from 6:30 – 8:00 p.m., in the Multipurpose Room at San Miguel Elementary School – 777 San Miguel Avenue in Sunnyvale. You are invited to attend and learn more about the investigation, as well as meet the EPA staff who will be involved in the sampling.

The majority of the data EPA has collected from Sunnyvale residences in the last year has shown no evidence of vapor intrusion, and sampling at some school buildings (the Montessori School buildings on Duane Avenue, which are over the highest concentrations in groundwater) has shown that levels of TCE are very low, and protective of children's health. However, EPA has developed a comprehensive testing program for vapor intrusion and we are doing additional sampling at certain homes in the neighborhood to ensure that levels of TCE in buildings are protective.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have any questions.

You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov.

EPA also has a website for the project: www.epa.gov/region9/triplesite which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 2014

San Miguel Neighborhood School Community
Sunnyvale, California

Dear Parents and Community Members:

Attached to this letter is a notice with information about an upcoming community meeting being held by the U.S. Environmental Protection Agency (EPA) at San Miguel Elementary School.

The meeting will focus on the upcoming indoor air sampling study at schools and residences in this part of Sunnyvale, associated with the "Triple Site."

The community meeting will be held on Wednesday, December 10th from 6:30 to 8:00 p.m., in the Multipurpose Room at San Miguel Elementary School – 777 San Miguel Avenue in Sunnyvale. You are invited to attend and learn more about the investigation, as well as meet the EPA staff who will be involved in the sampling.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have any questions.

You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov.

EPA also has a website for the project: www.epa.gov/region9/triplesite which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

Request for Indoor Air Sampling & Community Meeting

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • December 2014

Triple Site, Sunnyvale, California

The U.S. Environmental Protection Agency (EPA) is requesting permission from certain residents in the Duane/San Miguel Avenue neighborhood to collect indoor air samples this winter. There is no cost to owners or tenants selected for this testing, which EPA would like to conduct within the next few weeks. This sampling is part of a study of the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air). As a precaution, EPA would like permission from owners of residences to test their indoor air to determine if there is a buildup of trichloroethene (TCE).

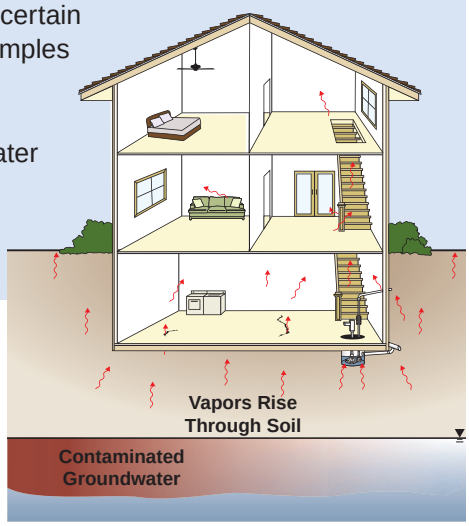


Figure 1: Vapor intrusion into a residence

TCE and Vapor Intrusion

The main chemical of concern in this investigation is TCE. TCE is a type of volatile organic chemical (VOC) which can move as vapors from groundwater through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air (See Figure 1). If this happens, and if the levels of VOCs are high enough and prolonged enough, it may create a health risk.

TCE is present in the groundwater due to historical semiconductor and other electronics manufacturing operations from the early years of Silicon Valley (dating back to the 1960s). Since the 1980s, the parties responsible for the environmental cleanup have been conducting activities to contain and clean up TCE in the shallow groundwater.

What Has Already Been Done?

Indoor air sampling has already been conducted at the Montessori school buildings on Duane Avenue because these buildings are over the highest concentration in groundwater. Results from this testing show that levels of TCE are very low, and protective of children's health. The good news so far is that air testing at homes in another Sunnyvale neighborhood this past year (for a similar TCE cleanup site) showed no evidence of vapor intrusion.

Why Sample Again?

This past year EPA strengthened its protective levels for TCE, due to new information about potential cancer risks related to TCE exposure. New levels that would warrant an accelerated EPA response were also developed for short-term risks, including organ problems in babies whose mothers were exposed during the first trimester of pregnancy.

Note: Your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Community Meeting

Wednesday, December 10th, 2014
6:30 – 8:00 p.m.

San Miguel Elementary School
Multipurpose Room
777 San Miguel Avenue
Sunnyvale, CA

Agenda	
6:30	**Sign in, Poster Sessions**
7:15	Welcome & Introduction – Enrique Manzanilla, EPA Division Director & John Lyons, EPA Asst. Division Director
7:30	Indoor Air Sampling Update – Melanie Morash, EPA Project Manager
7:40	Open Discussion/ Question & Answer
8:00	**Meeting Adjourn**

EPA has learned more about how vapor intrusion can vary throughout the year. This is why EPA is planning to sample at schools and residences this fall and winter to confirm that EPA's health protective levels for TCE exposure are not being exceeded.

The "Triple Site"

Informally known by the collective term "Triple Site", the site includes three groundwater TCE sites – the Advanced Micro Devices 901/902 Thompson Place Superfund Site (AMD 901/902 Site), the Philips (formerly Signetics) Site (Philips Site), and the TRW Microwave Superfund Site (TRW Site).

The Triple Site also includes the area of the neighborhood outside these facilities' property boundaries, which has been impacted by TCE-containing groundwater from the three source sites. This area includes the neighborhood around Duane/San Miguel Avenue to just past Highway 101 to the north (Lakehaven Drive), and between the Sunnyvale East Drainage Channel on the west and San Miguel Avenue on the east (see map). Concentrations of TCE in the shallow groundwater in this part of the neighborhood are elevated above the acceptable level of 5 micrograms per liter (ug/L).

What Happens Next

EPA is looking to sample residential units within the sampling area shown below. Please contact Melanie Morash, EPA Project Manager or Alejandro Diaz, EPA Community Involvement Coordinator if you would like your home sampled. Please call (or e-mail) and leave a message with your name, telephone number, mailing address and/or e-mail address and the best time to reach you.

If your home is selected, sampling will be conducted during the colder, winter months and involves placing a sampling device in the home (for example, on a shelf or counter) and in the crawlspace beneath the home over a 24-hour to 2-week period. EPA's goal is to conduct two sampling events spaced several weeks apart and can work with residents on their preferred sampling time. EPA will notify each resident individually of the results within a few weeks after the testing. If levels exceed EPA's health-based screening levels, EPA will present options to each resident as to how to proceed. EPA will also distribute another fact sheet to the neighborhood in early 2015 that summarizes the results of this investigation and next steps for the community.

Who Do I Contact If I Would Like My Home Sampled?

Please contact any of the following if you would like your home sampled:

Melanie Morash
EPA Project Manager
(415) 972-3050
morash.melanie@epa.gov

Alejandro Diaz
EPA Community Involvement Coordinator
(415) 972-3242
diaz.alejandro@epa.gov

Visit EPA's website for more information on the Triple Site: **www.epa.gov/region9/triplesite**

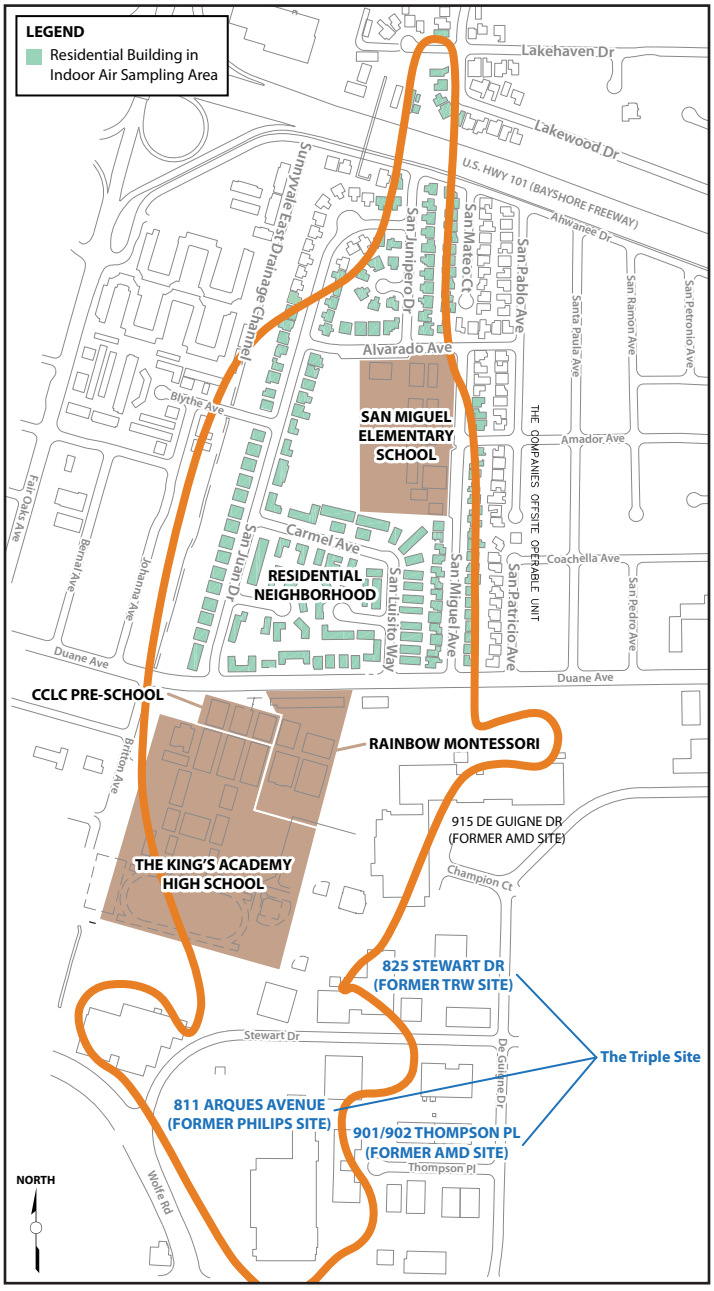
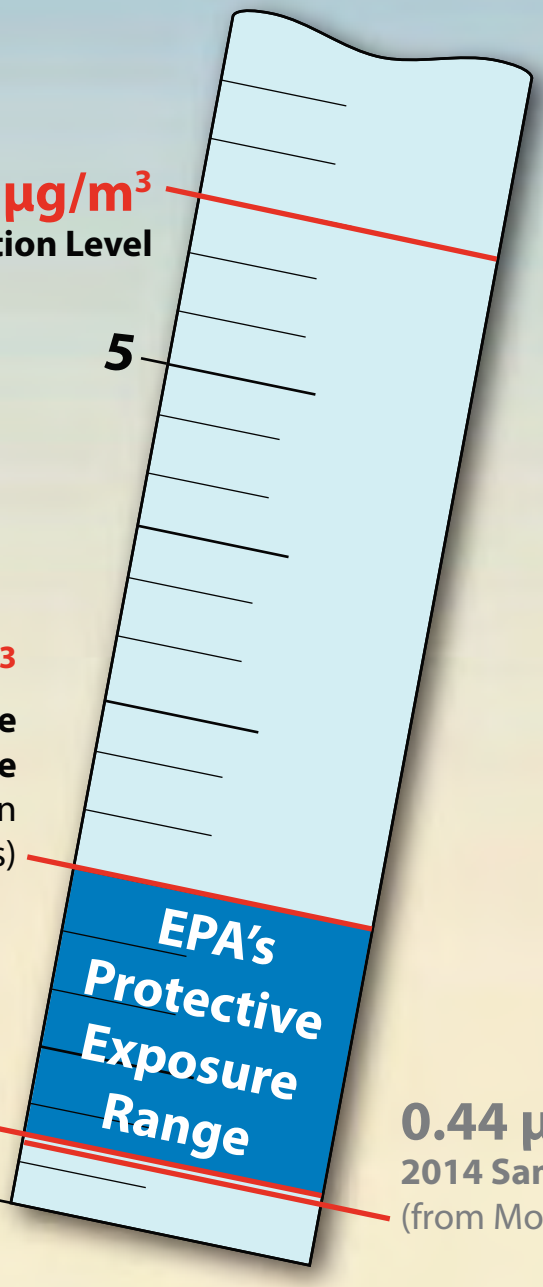


Figure 2: Indoor air sampling area. Approximate extent of TCE contamination above 5 micrograms per liter (µg/L) in shallow groundwater (around 10 ft).

EPA Region 9

HEALTH PROTECTIVE EXPOSURE LEVELS FOR TCE IN INDOOR AIR

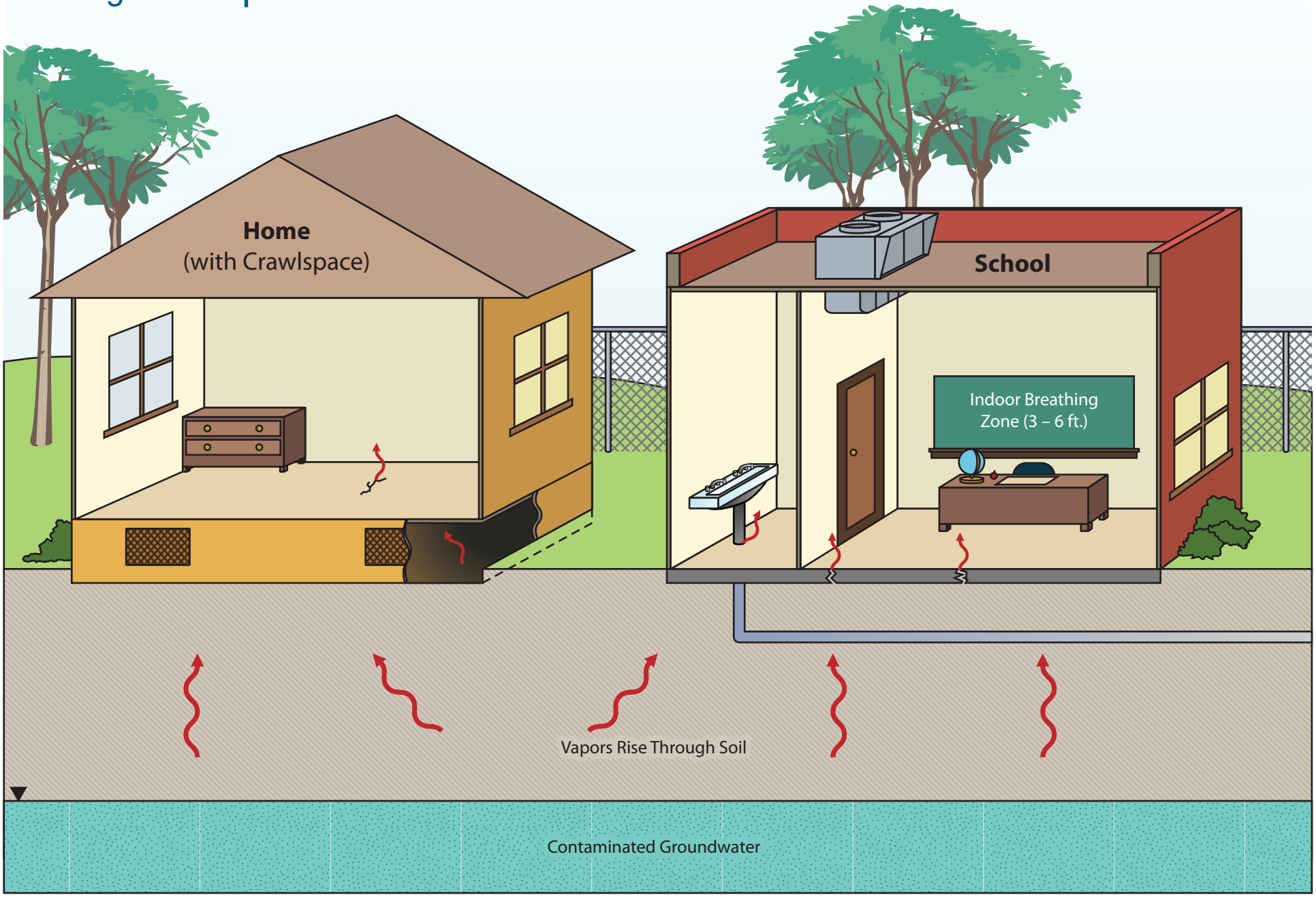
Homes and Schools



Units in micrograms per cubic meter (µg/m³) or parts per billion volume (ppbv). One part per billion is roughly equal to one drop of water in an Olympic sized swimming pool.

EPA Region 9

VAPOR INTRUSION: HOMES & SCHOOLS



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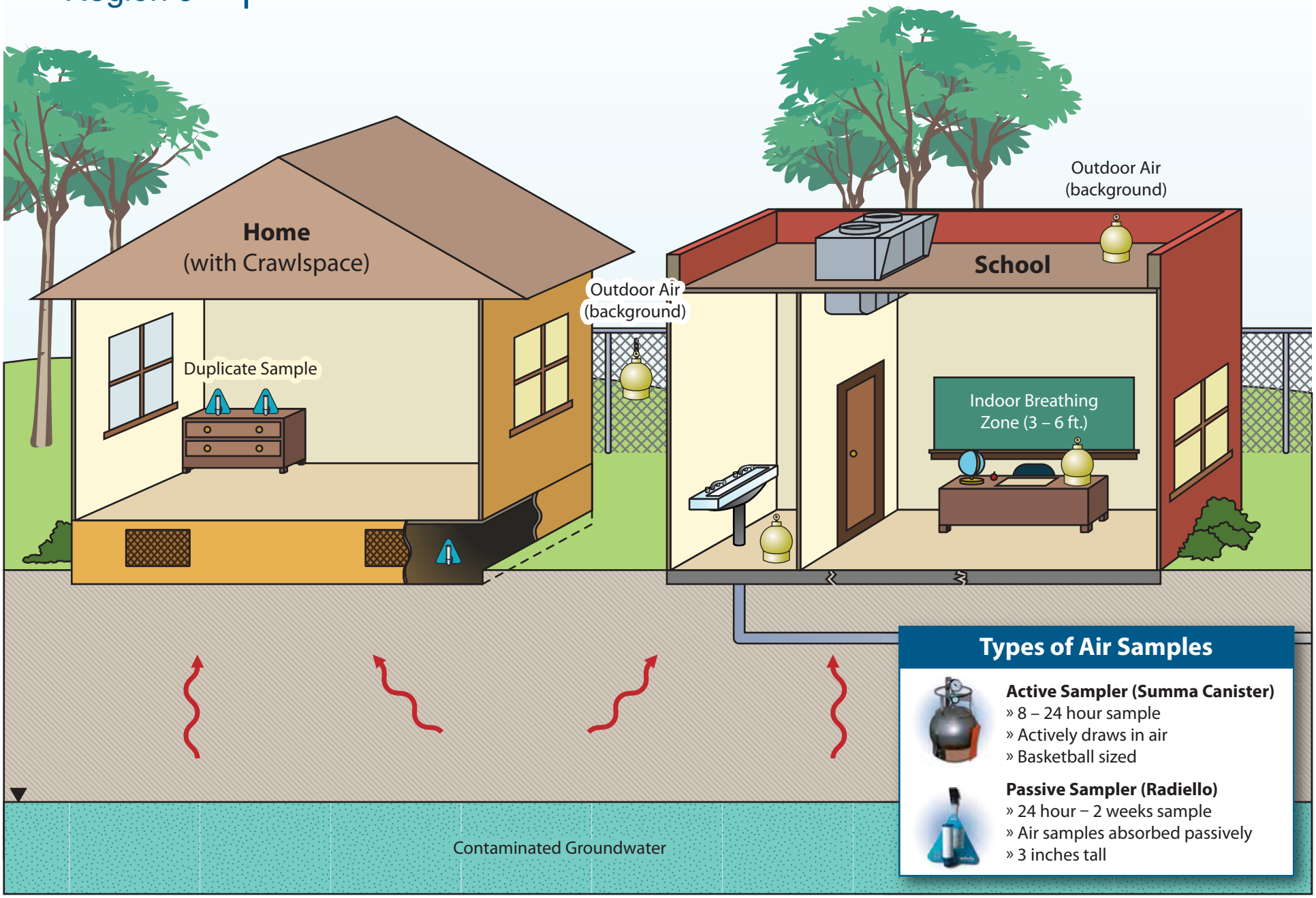
EPA Region 9

VAPOR INTRUSION SAMPLING



Types of Air Samples

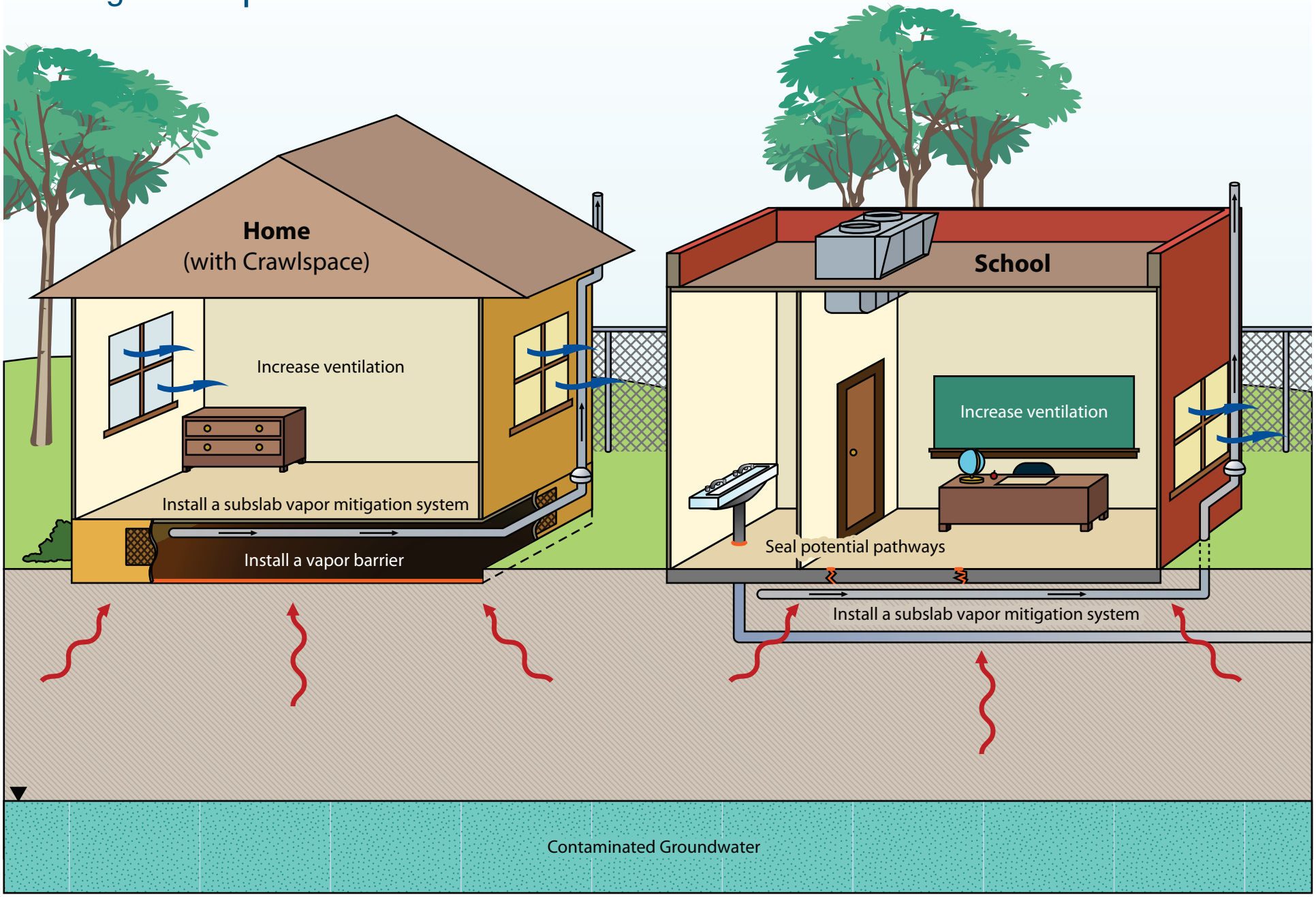
Active Sampler (Summa Canister)
» 8 – 24 hour sample
» Actively draws in air
» Basketball sized

Passive Sampler (Radiello)
» 24 hour – 2 weeks sample
» Air samples absorbed passively
» 3 inches tall

not to scale

EPA Region 9

VAPOR INTRUSION MITIGATION OPTIONS



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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX
75 Hawthorne Street • San Francisco, CA 94105

March 2015

Children's Creative Learning Center
Sunnyvale, California

Dear Parents and Community Members:

We are sending this third letter to update you with the results of the trichloroethene (TCE) indoor air testing that was conducted by the U.S. Environmental Protection Agency (EPA) at your school this past January and February, associated with the long-term groundwater cleanup at the "Triple Site." **EPA is working diligently to ensure the community is being protected from any chemicals related to the Triple Site. The good news is that in this sampling round all of the samples collected at your school showed very low concentrations which do not pose a health risk.**

The Children's Creative Learning Center (CCLC) Sampling Results

None of the CCLC samples showed any evidence of vapor intrusion and fully meet EPA's requirements for protecting children's health. All of the sample results were similar to the very low levels measured in outdoor air (and which are typical for a South Bay city).

Background on EPA Investigation

As you may know, EPA has been investigating the potential for vapor intrusion – a process where vapors from groundwater contamination may migrate into the indoor air – at schools and residences in the Duane/San Miguel Avenue neighborhood. Indoor air sampling has been conducted every year for the past 10 years at the Rainbow Montessori Child Development Center (Rainbow Montessori) to confirm that levels meet EPA's requirements for protecting children's health.

However, because we have learned more about how vapor intrusion can vary over time, EPA recently lowered its screening levels for TCE in indoor air to make them more protective. In addition, EPA has developed a more comprehensive testing approach. EPA took more air samples at Rainbow Montessori, The King's Academy, CCLC and San Miguel Elementary School this past winter, as well as at 54 households in the neighborhood, to make sure that the new, lower levels for TCE are not being exceeded. The first round of sampling was conducted during the winter months, when we expect the concentrations of TCE in indoor air to be at their highest.

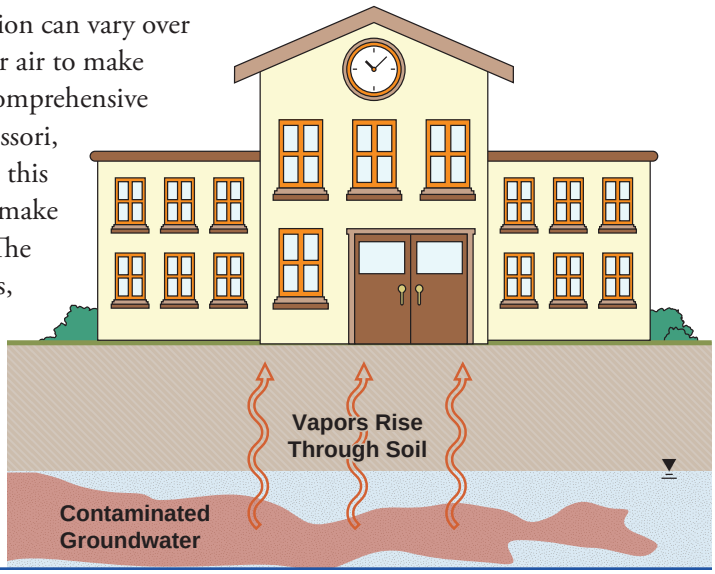

Figure: Vapor intrusion into a building

EPA considers the safe range of concentrations of TCE to be below 2.0 micrograms per cubic meter (µg/m^3) for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure. These levels are very conservative for school occupancy, where exposures times are much less.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it might create a health risk.

Note: Your drinking water is not affected by this contamination. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Next Steps

EPA will coordinate ventilation inspections with a Heating, Ventilation and Air Conditioning (HVAC) Specialist at each school to ensure that each system is functioning correctly and bringing fresh outdoor air into each classroom. **We are confident that supplying outdoor air to the classrooms will maintain the air quality for the children and teachers.** More sampling events at schools and homes are planned to better understand the vapor intrusion and help us decide whether additional monitoring and mitigation systems are needed as precautionary measures to further reduce risk.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to *morash.melanie@epa.gov* if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, at (415) 972-3242 or by e-mail to *diaz.alejandro@epa.gov*. EPA also has a website for the project: **www.epa.gov/region9/triplesite** which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX
75 Hawthorne Street • San Francisco, CA 94105

March 2015

The King's Academy
Sunnyvale, California

Dear Parents and Community Members:

We are sending this letter to update you with the results of the trichloroethene (TCE) indoor air testing that was conducted by the U.S. Environmental Protection Agency (EPA) at your school this past January and February, associated with the long-term groundwater cleanup at the "Triple Site." **EPA is working diligently to ensure the community is being protected from any chemicals related to the Triple Site. The good news is that in this sampling round the majority of samples showed very low concentrations which do not pose a health risk.**

The King's Academy Sampling Results

All of the samples collected from The King's Academy fully met EPA's requirements for protecting children's health. TCE was detected in some samples at concentrations higher than outdoor air (which is around 0.2 micrograms per cubic meter or µg/m^3, typical for a South Bay city). The maximum concentration was detected in a sample collected from a crawlspace beneath a portable classroom, which measured 1.1 µg/m^3. However, samples collected from inside the portable classroom itself were similar to outdoor air.

Background on EPA Investigation

As you may know, EPA has been investigating the potential for vapor intrusion – a process where vapors from groundwater contamination may migrate into the indoor air – at schools and residences in the Duane/San Miguel Avenue neighborhood. Indoor air sampling has been conducted every year for the past 10 years at the Rainbow Montessori Child Development Center (Rainbow Montessori) to confirm that levels meet EPA's requirements for protecting children's health.

However, because we have learned more about how vapor intrusion can vary over time, EPA recently lowered its screening levels for TCE in indoor air to make them more protective. In addition, EPA has developed a more comprehensive testing approach. EPA took more air samples at Rainbow Montessori, The King's Academy, Children's Creative Learning Center and San Miguel Elementary School this past winter, as well as at 54 households in the neighborhood, to make sure that the new, lower levels for TCE are not being exceeded. The first round of sampling was conducted during the winter months, when we expect the concentrations of TCE in indoor air to be at their highest.

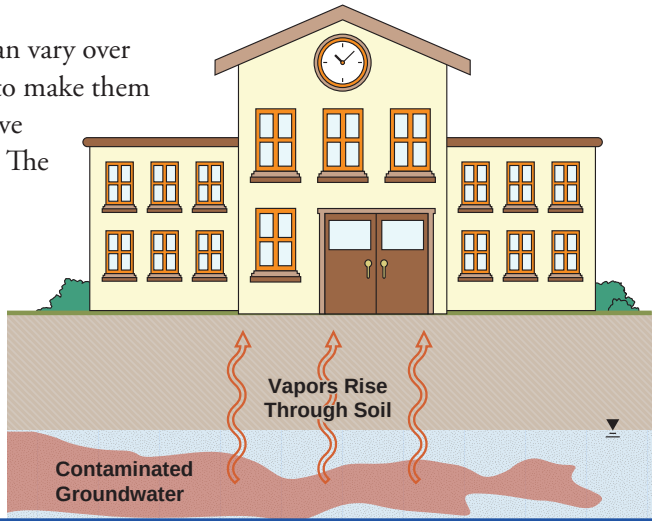

Figure: Vapor intrusion into a building

EPA considers the safe range of concentrations of TCE to be below 2.0 µg/m^3 for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure. These levels are very conservative for school occupancy, where exposures times are much less.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it might create a health risk.

Note: Your drinking water is not affected by this contamination. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Next Steps

EPA will coordinate ventilation inspections with a Heating, Ventilation and Air Conditioning (HVAC) Specialist at each school to ensure that each system is functioning correctly and bringing fresh outdoor air into each classroom. **We are confident that supplying outdoor air to the classrooms will maintain the air quality for the children and teachers.** More sampling events at schools and homes are planned to better understand the vapor intrusion and help us decide whether additional monitoring and mitigation systems are needed as precautionary measures to further reduce risk.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to *morash.melanie@epa.gov* if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, at (415) 972-3242 or by e-mail to *diaz.alejandro@epa.gov*. EPA also has a website for the project: **www.epa.gov/region9/triplesite** which has additional information.

Sincerely,

Melanie Morash, Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX
75 Hawthorne Street • San Francisco, CA 94105

March 2015

Rainbow Montessori Child Development Center
Sunnyvale, California

Dear Parents and Community Members:

We are sending this letter to update you with the results of the trichloroethene (TCE) indoor air testing that was conducted by the U.S. Environmental Protection Agency (EPA) at your school this past January and February, associated with the long-term groundwater cleanup at the "Triple Site."

EPA is working diligently to ensure the community is being protected from any chemicals related to the Triple Site. In this past sampling round, some results showed evidence of chemicals in indoor air, indicating that the phenomenon called vapor intrusion is likely occurring. We're continuing to investigate to better understand the problem and make sure that no cleaning products or other chemicals being stored indoors are interfering with our sampling.

The good news is that the majority of samples showed very low concentrations which do not pose a health risk, and we acted quickly to respond to one sample that was elevated – promptly lowering the levels by fixing the ventilation system.

EPA and the Rainbow Montessori staff would also like to invite parents to an informational meeting to learn more about the air testing and meet the EPA staff who are directly involved in the project. This meeting will be held on Tuesday, April 14th at 6:15 p.m. in the Building L Auditorium at the Rainbow Montessori campus.

Rainbow Montessori Sampling Results

As expected, the majority of the locations sampled at Rainbow Montessori showed low concentrations of TCE which do not pose a health risk. Only one room, the Building L auditorium, has occasionally shown concentrations that are unexpectedly high. We discovered a ventilation issue and worked to address it to promptly lower levels in the short term. In the long term, our work will continue to ensure that a permanent, reliable solution is maintained. We are also investigating further to determine whether some of the TCE detected in indoor air is coming from an indoor source (such as a cleaning chemical or consumer product).

In the small auditorium in Building L, one seven-day sample showed an elevated level of TCE (16 micrograms per cubic meter or µg/m^3). However, shorter duration samples taken in the same room (1-hour, 8-hour, and 12-hour), all showed acceptable TCE concentrations. Because the results of the seven-day sample were so unlike the other samples taken in the same room, a second round of samples was collected and analyzed. These second round samples all showed acceptable concentrations, similar to the shorter duration samples in the first round. Nevertheless, EPA conducted a third round of sampling in the auditorium to be safe. The third sampling event (seven-day) showed slightly elevated levels of TCE (2.4 to 2.8 µg/m^3).

Samples were also taken in the crawlspace below Building L, as well as in all of the other buildings. The crawlspace sample from Building L was the only other sample showing a heightened concentration above EPA's acceptable range – measuring 6.2 µg/m^3. Though the crawlspace is not easily accessible, the elevated results indicate that vapors are present, and **to be fully protective a mitigation system is being designed for this building** – a "crawlspace venting system."

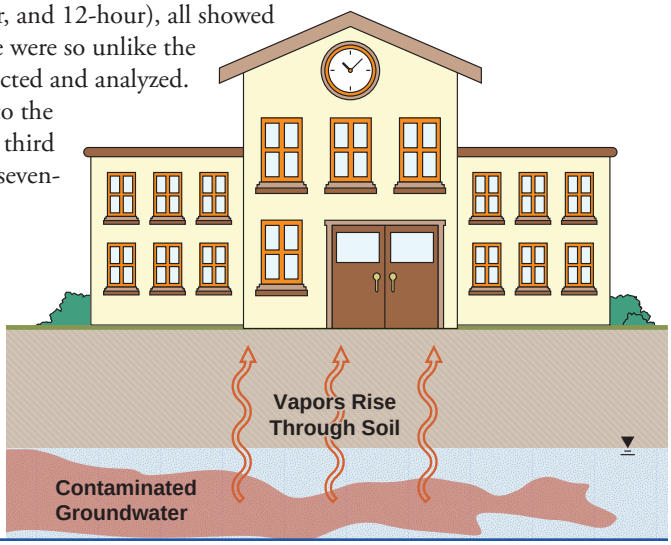

Figure: Vapor intrusion into a building

Two other samples showed levels that were acceptable in terms of health risks, although towards the upper end of EPA's safe range – a classroom sample in Building H (1.5 µg/m^3) and a crawlspace sample beneath Building V (1.9 µg/m^3). Additional samples will be taken in these locations and others to better understand the potential for these levels to vary over time, and whether mitigation systems in these buildings would be appropriate to further reduce risk.

Ventilation Issue

Due to the one elevated sample in the auditorium, we immediately initiated a series of response actions. We discovered that a malfunctioning actuator in the rooftop ventilation system was stuck in the "closed" position, so no fresh air was being brought into the building by the ventilation system. Repairs to the system were made and follow-up sampling confirmed that TCE levels were promptly lowered to 0.2 µg/m^3, which is the same as typical levels of TCE in outdoor air. **EPA believes that there was not a significant exposure to students or teachers because the auditorium was used infrequently and when it was used, for only short periods of time.** These shorter periods would be better represented by the shorter duration samples, all of which met EPA's requirements for protecting children's health.

Background on EPA Investigation

As you may know, EPA has been investigating the potential for vapor intrusion – a process where vapors from groundwater contamination may migrate into the indoor air – at schools and residences in the Duane/San Miguel Avenue neighborhood. Indoor air sampling has been conducted every year for the past 10 years at Rainbow Montessori to confirm that levels meet EPA's requirements for protecting children's health.

However, because we have learned more about how vapor intrusion can vary over time, EPA recently lowered its screening levels for TCE in indoor air to make them more protective. In addition, EPA has developed a more comprehensive testing approach. EPA took more air samples at Rainbow Montessori, The King's Academy, Children's Creative Learning Center and San Miguel Elementary School this past winter, as well as at 54 households in the neighborhood, to make sure that the new, lower levels for TCE are not being exceeded. The first round of sampling was conducted during the winter months, when we expect the concentrations of TCE in indoor air to be at their highest.

EPA considers the safe range of concentrations of TCE to be below 2.0 µg/m^3 for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure. These levels are very conservative for school occupancy, where exposures times are much less.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building, it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it might create a health risk.

Note: Your drinking water is not affected by this contamination. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Next Steps

In the next few weeks EPA will coordinate ventilation inspections with a Heating, Ventilation and Air Conditioning (HVAC) Specialist to ensure that each system is functioning correctly and bringing fresh outdoor air into each classroom. **We are confident that supplying outdoor air to the classrooms will maintain the air quality for the children and teachers.** More sampling events at schools and homes are planned to better understand the vapor intrusion and help us decide whether additional monitoring and mitigation systems are needed as precautionary measures to further reduce risk.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to *morash.melanie@epa.gov* if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, at (415) 972-3242 or by e-mail to *diaz.alejandro@epa.gov*. EPA also has a website for the project: **www.epa.gov/region9/triplesite** which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX
75 Hawthorne Street • San Francisco, CA 94105

March 2015

San Miguel Elementary School
Sunnyvale, California

Dear Parents and Community Members:

We are sending this third letter to update you with the results of the trichloroethene (TCE) indoor air testing that was conducted by the U.S. Environmental Protection Agency (EPA) at your school this past January and February, associated with the long-term groundwater cleanup at the "Triple Site." **EPA is working diligently to ensure the community is being protected from any chemicals related to the Triple Site. The good news is that in this sampling round the majority of samples showed very low concentrations which do not pose a health risk.**

San Miguel Elementary School Sampling Results

All of the samples collected from San Miguel Elementary fully met EPA's requirements for protecting children's health. TCE was detected in some samples at concentrations higher than outdoor air (which is around 0.2 micrograms per cubic meter or µg/m^3, typical for a South Bay city). The maximum concentration was detected in a sample collected from a crawlspace beneath the California Young World portable classroom, which measured 1.3 µg/m^3. However, samples collected from inside the portable classroom itself were similar to outdoor air.

Background on EPA Investigation

As you may know, EPA has been investigating the potential for vapor intrusion – a process where vapors from groundwater contamination may migrate into the indoor air – at schools and residences in the Duane/San Miguel Avenue neighborhood. Indoor air sampling has been conducted every year for the past 10 years at the Rainbow Montessori Child Development Center (Rainbow Montessori), which continues to confirm that levels meet EPA's requirements for protecting children's health.

However, because we have learned more about how vapor intrusion can vary over time, EPA recently lowered its screening levels for TCE in indoor air to make them more protective. In addition, EPA has developed a more comprehensive testing approach. EPA took more air samples at Rainbow Montessori, The King's Academy, Children's Creative Learning Center and San Miguel Elementary School this past winter, as well as at 54 households in the neighborhood, to make sure that the new, lower levels for TCE are not being exceeded. The first round of sampling was conducted during the winter months, when we expect the concentrations of TCE in indoor air to be at their highest.

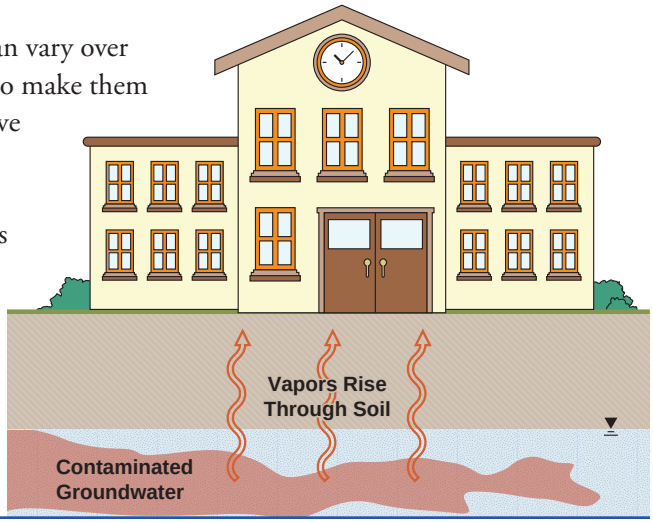

Figure: Vapor intrusion into a building

Again, the majority of school samples showed very low concentrations which do not pose a health risk, with the exception of one sample (out of more than 100 total) that was unexpectedly high – collected from Rainbow Montessori's Building L auditorium. EPA has sent a letter similar to this one to Rainbow Montessori parents, with more information about the testing results in Building L. EPA discovered a ventilation issue at this building and worked to address it to promptly lower levels in the short term. To be fully protective in the long term a mitigation system is being designed for this building, and we are continuing to investigate further to better understand the problem.

EPA considers the safe range of concentrations of TCE to be below 2.0 µg/m^3 for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure. These levels are very conservative for school occupancy, where exposures times are much less.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it might create a health risk.

Note: Your drinking water is not affected by this contamination. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Next Steps

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Please do not hesitate to contact me at (415) 972-3050 or by e-mail to *morash.melanie@epa.gov* if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, at (415) 972-3242 or by e-mail to *diaz.alejandro@epa.gov*. EPA also has a website for the project: **www.epa.gov/region9/triplesite** which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, Project Manager

Triple Site Community Meeting – Rainbow Montessori School – Meeting Minutes
Tuesday, April 14, 2015 | 6:00 – 7:00 p.m.

Staff members:

- Melanie Morash, EPA
- Alejandro Diaz, EPA
- Daniel Stralka, EPA
- John Lyons, EPA
- Caleb Shaffer, EPA
- Rusty Harris-Bishop, EPA
- Rose Condit, CB&I
- Amy Huang, Circlepoint

I. Presentation by Melanie Morash

- Two main points:
    - EPA's top priority is investigating vapor intrusion and ensuring that communities are protected
    - Lots of data have already been taken – year in and year out, the data have been protective
- EPA is now responding and addressing what might happen in the future – what is the potential for risk?
    - There is an extensive network of pumping wells to contain the plume (and maintain "hydraulic control")
    - At AMD & TRW sites, bioremediation projects in place and working well to reduce high levels of trichloroethene (TCE) in the groundwater
    - EPA will work with the Responsible Parties in the coming year on investigating other treatment technologies to accelerate the cleanup of the groundwater
- Schools and residences are a high priority for this year
- This past year EPA's action level for TCE was strengthened.
    - Single most investigated chemical in history of agency (20+ year effort)
    - Action levels were lowered
    - EPA has taken a more cautious approach to the sampling (e.g. , to determine how levels can vary over time)
- Results from Rainbow Montessori showed elevated levels in some of the newer types of samples that are being collected this year, but all "classroom-type" samples (similar to the ones that have been collected for the past 10 years) continue to remain protective
    - Sampled in a new way (extended duration); also sampled crawl space
    - School-day-length samples were all below 2 ug/m3, but the 7-day sample of the auditorium was 16 ug/m3. The crawl space also showed TCE above 2 ug/m3. Further investigation revealed that an actuator that controls a damper on the ventilation unit on the roof had malfunctioned (it was not allowing fresh air into the room)
    - 2nd round of sampling following repairs to the ventilation system confirmed TCE had dropped to extremely low levels, consistent with outdoor air.

- This month, EPA is working with the schools to collect "ventilation-off" samples, to assess "worst-case" scenarios
    - EPA is working with the RPs to design a permanent engineered system for Building L (to address the elevated levels measured in the crawl space and auditorium)
    - The RPs are investigating whether ventilation of the crawl space will fully reduce the concentration levels measured in the auditorium)
    - In the meantime, EPA is working with the RPs to perform ventilation inspections
    - If the crawl space ventilation doesn't work or works only partially, other options will be considered
        - Additional sampling in the building, including "real-time" sampling or sub-slab sampling in the auditorium floor
        - Soil vapor extraction system
        - Incorporating ventilation as part of the long-term solution, as appropriate

II. Questions from Audience

1. What were the 3 buildings with the highest levels at Rainbow?
    a. So far, buildings H, L, and V. EPA will continue to sample under different ventilation scenarios (including "ventilation off"), before making a final decision as to which buildings require mitigation.
2. What are the effects of long-term exposure (higher than 2 ug/m3)?
    a. Cancer and non-cancer health effects (liver, kidneys, neurotoxin, immune system, male reproductive system, birth cardiac defect).
3. Is the action level of "2 ug/m3" based on a normal adult? Or is it different for a small child?
    a. If we were to hit 2 ug/m3, you wouldn't immediately see effects (there's a safety buffer), and the number is based on fetus exposure for 24 hours a day over 7 days.
4. The measurement is a density measurement, but you also have a 24/7 time measurement. What is the action level based on?
    a. 2 ug/m3 (concentration in the air) and breathing that level for 24/7.
5. Is it an average measurement or peak measurement?
    a. A "grab sample" is the measurement over a short period of time, such as 20 seconds or 60 seconds. An 8-hour sample or "integrated sample" will be an average measurement over that period of time.
    b. EPA is also looking at the possibility of "real-time" measurements (using a device that can measure every 15 minutes) – but these don't show how values vary over time/longer-term.
6. What was the duration when you measured level 16 ug/m3?
    a. 24 hours over 7 days.
7. How does the agency determine what a permissible level is? Lab rats?
    a. EPA does a literature search regarding occupational exposure or human exposure and examines what is the most sensitive endpoint (cancer or other health effects) and how strong the data are. There were also studies of chick embryos and epidemiological

studies where communities in the US were drinking contaminated groundwater. With action level of 2 ug/m3, EPA still would not expect to see effects in the most sensitive population/individuals, but is asking if there is a level of concern where they need to do more.

   b. All of the studies were presented by EPA to the US Science Advisory Board, which did an independent review and agreed the data were scientifically sound. There have been many industry challenges to these low action levels, however EPA continues to maintain that a short-term screening of 2 ug/m3 is appropriate for residential/school scenarios.
   c. EPA is currently pursuing protective and proactive risk management efforts –didn't want to wait another 5-10 years to have a more definitive answer on the science.

8. How long has the Triple Site been recognized as a Superfund site?
   a. AMD & TRW have been on the National Priorities List (NPL) of Superfund sites since 1991. Philips was proposed for listing on the NPL at the same time, but wasn't because it was still an active semiconductor facility (regulated under the Resource Conservation and Recovery Act (RCRA)).
   b. Regulation of Philips was transferred back to EPA from the State Water Resources Control Board. EPA may now list it on the NPL; it is being regulated as a Superfund site now.
9. This is a private school; would the testing be different or would requirements be different if it were public?
   a. Testing is occurring at CCLC, Kings Academy, Rainbow, and San Miguel. It's a mix of public and private, but the same regulatory/health standards apply to all.
   b. The Responsible Parties (RPs) are performing and paying for the testing and any required mitigation, under EPA oversight. The relationship has been positive so far.
   c. EPA's focus doesn't change when looking at communities with environmental justice issues.
10. So far, the remediation is improving ventilation? That's been effective?
   a. Yes, EPA is confident that providing fresh air maintains air quality.
11. Are there plans for continuous monitoring?
   a. EPA hasn't ruled out doing that kind of sampling. After the "HVAC Off" testing, EPA will reevaluate if a technology like that needs to be added.
12. Why doesn't EPA identify failures instead of just sampling?
   a. That's why EPA is looking at using other (sub-surface) controls. Experience in Mountain View and other cities in the South Bay has shown those technologies to be reliable. The long-term solution is to get the groundwater cleaned up.
13. What are the recommendations for Building H specifically?
   a. EPA didn't see anything over 2 ug/m3 in Buildings H or V, but it was close. Ventilation system inspections have occurred, and new sampling locations/classrooms have been added to Buildings H, L, and V for the next round of sampling to cover discrete ventilation zones.
   b. LEED-certified/Green buildings can have high levels of vapor intrusion due to automated shutoff of outdoor air intakes when outdoor air temperatures are high, to reduce energy

costs associated with cooling hot outdoor air. For some buildings, ventilation is not ideal for a long-term solution.

14. In your "HVAC Off" sampling, will you measure average or peak?
    a. It will be an integrated sample (average) over 24 hours. For example, the HVAC will be shut down on Friday evening, left alone for 24 hours, and then the samples will be taken.
15. What was the rate of the sampling for the last 10 years? Once a month? Once a year?
    a. The RPs began indoor air sampling in 2003 through Locus Technologies. They collected 24-hour indoor air samples once a year in many classrooms. Duplicate and outdoor air samples were taken at the same time.
    b. EPA now wants to sample under buildings, in floor drains (pathway samples), through cracks in slab, with ventilation off, etc.
16. With additional samples, you obviously have a higher sample confidence. What are the confidence levels?
    a. EPA has not done a statistical analysis of the samples from the past 10 years, but is starting to do it for this year's sampling event (looking at mean concentrations for the outdoor air, 95% Upper Confidence Levels, etc.).
17. What is the targeted confidence level for the outside air?
    a. EPA is looking at each area as an individual point and calculating confidence (95%) compared to the level of concern, e.g. , for that time period.
    b. Some will argue for a sampling approach that entails a limited amount of sampling (for example, one block) and then making assumptions about the other buildings in an area. However, vapor intrusion is complex and often this isn't possible because each home is unique. A Mountain View study of identical apartment units on the same slab (only separated by a wall) showed very different results, indicating that EPA can't necessarily make inferences about wider populations. "Preferential pathways" (drains, etc.) matter.
18. Do you sample multiple points in the same room? What's a large enough sample size?
    a. Air mass does mix. EPA is taking duplicate samples, "split" samples together with the Responsible Parties, and samples a variety of locations in rooms and various ventilation zones.
19. (Commenter asked again for confidence level.)
    a. EPA is taking duplicates to ensure samples are performing to standard and taking samples at multiple times – looking at conditions where the potential for vapor intrusion is highest.
    b. EPA cannot give a statistical confidence range, but agreed to discuss with the commenter afterward.

United States Environmental Protection Agency /
Agencia de Protección Ambiental de los Estados Unidos

The Triple Site / *Sitio Triple Site*

You're invited!

Thursday
May 14th, 2015
6:30 – 8:00 p.m.

¡Estas invitado!

jueves
14 de mayo, 2015
6:30 – 8:00 p.m.

San Miguel Elementary School
Multipurpose Room
777 San Miguel Avenue
Sunnyvale, CA

¡Habrá interpretación en Español!

EPA Contact
Melanie Morash
(415) 972-3050
morash.melanie@epa.gov

Contacto de EPA
Alejandro Diaz
(415) 972-3242
diaz.alejandro@epa.gov

Come to the 2nd Triple Site Community Meeting / *Venga a la 2nda Reunión Comunitaria del Sitio Triple Site*

We'll share the results from the first round of neighborhood indoor air testing and outline our next steps. / *Compartiremos los resultados de la primera vuelta del muestreo del aire interior en la vecindad y resumiremos nuestros próximos pasos.*

Agenda	
6:30	Sign in, Poster Sessions
7:15	Welcome & Introduction – Enrique Manzanilla, EPA Division Director
7:30	Indoor Air Sampling Update – Melanie Morash, EPA Project Manager
7:40	Open Discussion/Question & Answer
8:00	Meeting Adjourn

Orden del día	
6:30	Registro, Sesión de Cartulinas
7:15	Bienvenido e Introducción – Enrique Manzanilla, Director del Programa Superfund
7:30	Actualización del Muestreo del Aire Interior – Melanie Morash, Gerente del Proyecto de la EPA
7:40	Discusión Abierta/Preguntas y Respuestas
8:00	Cierre de Sesión

Website / *Sitio Web*: www.epa.gov/region9/triplesite

United States Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, CA 94105
Attn: Melanie Morash (Triple Site 4/15)

Official Business
Penalty for Private Use, $300

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Triple Site Community Meeting Summary
San Miguel Elementary School – Multipurpose Room
May 14, 2015

Attendees:

- ≠ Melanie Morash, EPA
- ≠ Alejandro Diaz, EPA
- ≠ Daniel Stralka, EPA
- ≠ Enrique Manzanilla, EPA
- ≠ Dana Koefoed, Circlepoint
- ≠ Caleb Shaffer, EPA
- ≠ Lawrence McGuire, Circlepoint
- ≠ Rusty Harris-Bishop, EPA
- ≠ Rose Condit, CB&I
- ≠ David Yogi, EPA
- ≠ Soledad Calvino, EPA
- ≠ Mathew Plate, EPA
- ≠ Suzanne Skadowski, EPA
- ≠ Elsa Anaya, EPA

A second community outreach meeting with residents in the Duane/San Miguel Avenue neighborhood was held on May 14, 2015 in the multipurpose room at San Miguel Elementary School from 6:30 – 8:00 pm. The purpose of the meeting was to provide a project update and results from EPA's first round of indoor air sampling results (collected in January 2015). In addition to the project team, 12 community members signed in for the meeting (see attachments at the end of this summary for a copy of the meeting sign in sheets, agenda and handouts).

The meeting was advertised through the distribution of a postcard announcement by area schools sampled (Children's Creative Learning Center, King's Academy, Rainbow School, San Miguel Elementary). Postcards were also mailed to 1,202 property owners and residents located within the project testing area (see attachments at the end of this summary for a copy of the postcard).

The meeting was set up with five information stations. Each was staffed by EPA and/or EPA contractors on hand to provide information and answer questions. Stations included: Vapor Intrusion, Vapor

Intrusion Sampling, Vapor Intrusion Mitigation Options, Health Protective Exposure Levels for TCE in Indoor Air, and Triple Site Indoor Air Sampling Area.

I. Caleb Shaffer led meeting introductions, followed by the topics listed below:

- ≠ Brief background of the area, including the companies, Philips Semiconductor (Philips), Advanced Micro Devices (AMD), and Northrop Grumman (Northrop), whose past activities contaminated groundwater in the area and EPA's role to protect the environment
    - o Vapor Intrusion – when vapors rise from contaminated groundwater and may accumulate indoors in nearby buildings
- ≠ Purpose of Meeting:
    - o Provide updates from testing, answer questions and next steps

II. Melanie Morash

- ≠ Introduction and acknowledgment of the team
- ≠ Results:
    - ▪ Is vapor intrusion happening in the neighborhood?
        - o Yes
        - o Found strong evidence that it is happening, specifically in School Buildings off of Duane Avenue
        - o Sampled 4 schools and 54 residences (north of Duane Avenue up to Lakewood/Lakehaven Village area) during first round of sampling

        Schools:

        - All of the typical classroom-type samples collected at all of the schools sampled (with no changes to the building) came back meeting EPA's most protective and stringent requirements. Samplers were left in classrooms for a typical school day (8-12 hours depending upon the school).
        - Now sampling in a new way. Approach has changed based on new information about TCE and how vapor intrusion happens.
        - Expanded testing framework, including samples collected underneath buildings (crawl spaces), pathway samples on the floor of suspected entry points, and ventilation-off samples where ventilation is shut off and buildings sealed up as best can be done to allow any vapors to accumulate.
        - Elevated levels of TCE vapors were measured in ventilation-off samples in at least 3 of the Montessori School buildings. These findings indicate that when no fresh outdoor air is being provided to the building, vapors from the subsurface are entering and accumulating, having the potential to cause unacceptable exposures. We are acting preemptively to address potential future issues by improving ventilation and designing permanent engineered systems to address the vapor intrusion.
        - The first round of sampling at Children's Creative Learning Center found no signs of vapor intrusion. Results of the second round of testing at the school will be known soon.

- Results at San Miguel Elementary and King's Academy were similar to each other. Some of the samples taken showed no evidence of vapor intrusion; others found very low levels of vapor intrusion that are not considered to be a health risk. Results of second samples taken in these buildings will be known soon.
- Elevated results at Montessori School were acted upon immediately. We found a damper had failed in Building L, allowing no fresh air to enter. This problem was fixed immediately and resampled. After we opened the outdoor ventilation, the levels dropped immediately.
- Met with Montessori School staff and parents to provide results.

Households:

- During first sampling event, we reached out to over 400 households in December 2014. Of that number, 100 signed up and sampling appointments were made at 54 homes.
- Samples were taken over a 24-hour period and for 7 to 14 days
- Every home sampled met EPA's most protective and stringent requirements.
- Some homes showed no evidence of vapor intrusion. Other homes showed a low-level of vapor intrusion. Three homes had elevated TCE levels.
- EPA standard is 2 ug/m3. There were no exceedances of the 2 ug/m3 standard.
- The three residences with the highest levels were still below 2 ug/m3.
- We are going back to test these three households again. Homes will be closed-off; HVAC will be turned off so samples can be taken under "worst conditions".

≠ Next Steps:

- We have enough information to hold this meeting with the public to convey results and provide additional information.
- Additional Sampling:
  - Just finished additional sampling at schools.
  - June: Resample the 4 schools again and additional households.
  - Be in the neighborhood throughout 2015 into 2016, with a focus on the Duane Avenue area.
  - Winter: more testing with closed windows and heat off.
  - Continue to work with Philips, AMD, and Northrop to find root cause of contamination and clean up the ground water.
  - Historically groundwater has been pumped out via 54 extraction wells and treated with ultraviolet light and air stripping. A network of 200 active monitoring wells are sampled annually to monitor the TCE plume.
  - The technology used for this method worked well in the 1980's but looking at groundwater data over the past 10+ years, it has now plateaued and reached its limit.
  - AMD and Northrop are using a new groundwater technology involving the use of bacteria that naturally occurs underground to break down the chemicals and reduce concentrations. This technique has proven to be remarkably effective.

- Continue to schedule internal meetings with these companies so that we can continue to clean up the groundwater.

III. Question & Answer

- ≠ Q: What does triple refer to?
- ≠ A: Information name as a collective for the three companies. There are three superfund sites.
- ≠ Q: Last school sampling was at Rainbow Montessori. From then until now, have you taken more samples and found more findings?
- ≠ A: On April 14th we met parents at Rainbow and sent letters home. As soon as we have results for updated information, we always put the information online. Later in April, we did another round of ventilation-on sampling (no changes and put samplers out). All of the typical classroom samples continue to show that they are protective levels. As long as there is fresh air provided, then the levels are protected.
    - I heard you say that those levels were revised. How do we know that these are safe levels, say 5 years from now?
    - TCE it is the most intensively studied chemical in the entire history of the EPA. Process that went into lowering levels to 2 for the short term effects and 0.48 for the long term effects was a 25 year process in the making. TCE is the most peer reviewed chemical in the whole history of the EPA. The level could change again but because it was so widely used there was a lot of effort to study and gather the information to derive these levels.
- ≠ Q: What does 2 really mean?
- ≠ A: 2 ug/m3 is the level that EPA considers protective for short-term exposure. However, we would not expect to see adverse health effects at 2 ug/m3, because these levels have been set incorporating multiple safety factors.
- ≠ Q: What other rooms at Montessori School were of concern?
- ≠ A: The music room in Building S (now used as a staff lounge) and the crawlspace in Building L. Levels were elevated when there was no ventilation. When there is ventilation, levels are acceptable. These are preliminary results. We do side by side sampling with Philips and EPA for quality assurance. Anytime we have information we can share and data is validated, we post it onto the website.
    - Building L does not have windows. I asked Montessori and they do not have plans to put in windows. Is EPA looking at this?
    - At some sites where we have sampled with similar investigations (Cupertino, Mountain View, and Santa Clara) we have found that ventilation is part of the solution to vapor intrusion. We are continuing to evaluate and look at long-term solutions such as adding ventilation, windows, etc. At Building L, ventilation is not going to be part of the solution. We are going to look at designing and installing engineering systems underneath the building to prevent the vapors from ever coming up again. Many older buildings need repaired/upgraded systems.
- ≠ Q: My home is not in the triple site area but close to it. Can I request sampling?
- ≠ A: Yes, anyone can sign up to be sampled. We evaluate it on a case by case basis.
- ≠ Q: How much variation might you expect to see going from one room to another?

- ≠ A: Evaluate all of the area to see if there are different levels (floor heaters, crawl spaces, and basement). It is very individual for the home.
- ≠ Q: Where were the three homes with the elevated results?
- ≠ A: We cannot give out addresses for privacy. One of the homes was on the 600 block of San Miguel, one was on 600 block of San Juan and the third was nearby. This will be the focus of our next testing.

THE TRIPLE SITE COMMUNITY MEETING

THURSDAY, MAY 14, 2015, 6:30 – 8:00 P.M.

SAN MIGUEL ELEMENTARY SCHOOL
MULTIPURPOSE ROOM
777 SAN MIGUEL AVENUE
SUNNYVALE, CA

AGENDA

6:30 p.m.	**Sign in, Poster Sessions**
7:15 p.m.	**Welcome & Introduction** Enrique Manzanilla, EPA Division Director
7:30 p.m.	**Indoor Air Sampling Update** Melanie Morash, EPA Project Manager
7:40 p.m.	**Open Discussion/Question & Answer**
8:00 p.m.	**Meeting Adjourn**

SAMPLING ACCESS AGREEMENT

This Sampling Access Agreement ("Agreement") is entered into on this _____ day of _____ 2015, between _____ ("Owner") and the U.S. Environmental Protection Agency ("EPA").

Terms and Conditions

1. Access. Owner grants EPA and its designated agents, contractors, and representatives access to the property located at _____ in Sunnyvale, California (the "Property"), for the purpose of obtaining indoor air samples as part of EPA's indoor air quality investigations in Sunnyvale, California. Access to the Property will be at such times and locations and along such routes as are acceptable to Owner for the sole purpose of conducting indoor air sampling. All sampling conducted under this Agreement shall be without cost to Owner. No other activities shall be conducted without the consent of Owner.

2. Non-Interference. EPA's indoor air sampling work will at all times be conducted in such a way as to minimize interference with the Owner's use and enjoyment of the Property. EPA will at all times keep the Property free from accumulations of materials.

3. Restoration. When EPA's indoor air sampling work has finished, EPA shall remove any and all materials brought onto the Property by EPA.

4. Termination. This Agreement will terminate when EPA has completed the indoor air sampling activities.

5. Warranty. Owner warrants and represents that he/she: (a) is the owner of the Property and has the authority to enter into this Agreement to grant access to EPA to perform indoor air sampling work; (b) will refrain from using common sources of TCE during the sampling period; and (c) will not move, tamper with, or damage sampling equipment.

6. Choice of Laws. This Agreement shall be governed by and interpreted in accordance with federal law and, where appropriate, the laws of the State of California.

7. Entire Agreement. This Agreement constitutes the entire agreement of the parties and may not be amended or modified, except in writing and signed by the parties.

OWNER

Signature:_____
Name:_____
Date:_____
Telephone:_____
E-mail:_____
Mailing Address:_____
_____
_____

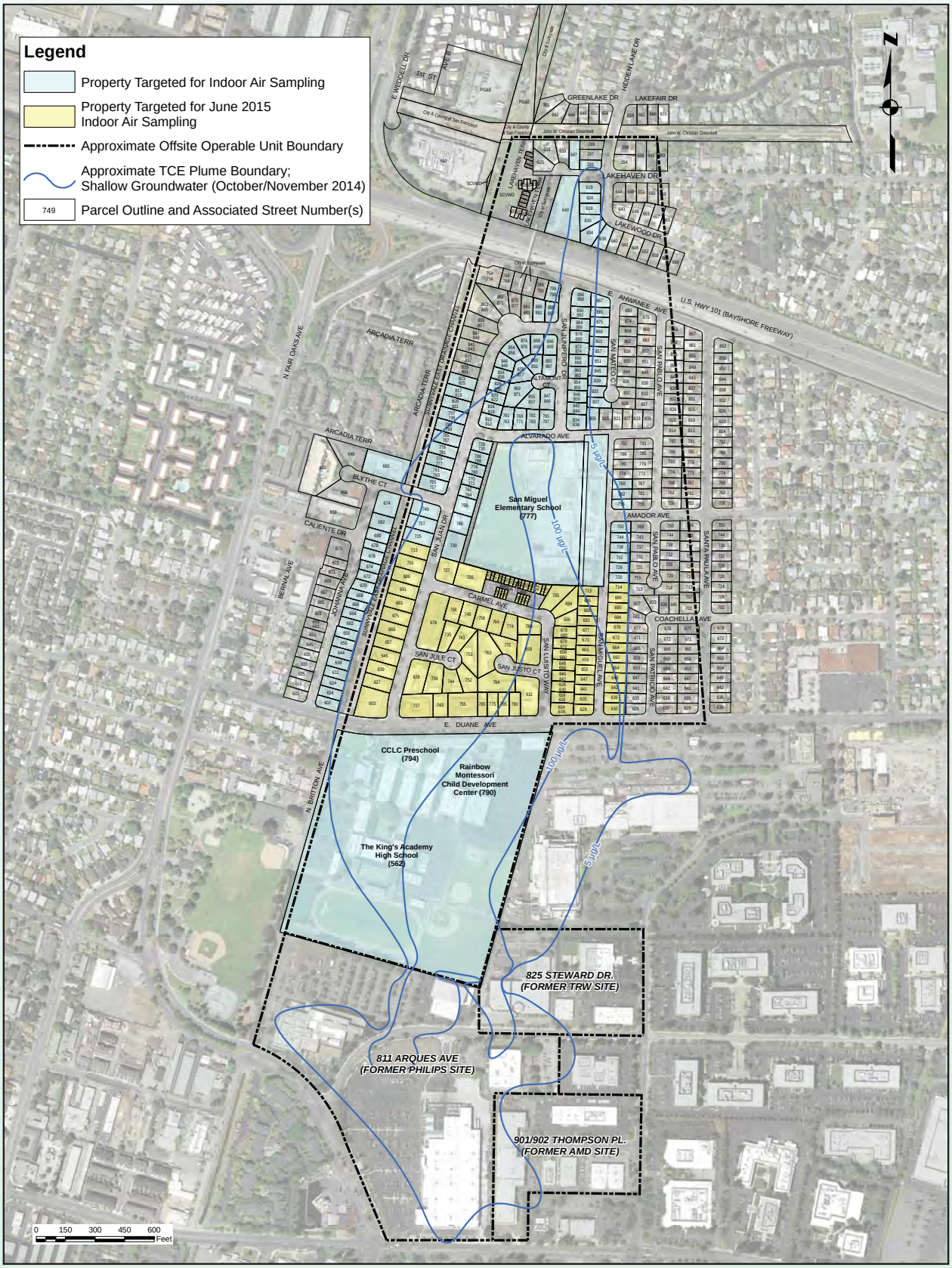
EPA

Signature:_____
Name:_____
Title:_____
Date:_____

EPA Region 9

Triple Site

Sunnyvale, California • May 2015



Indoor air sampling area. Approximate extent of TCE contamination above 5 micrograms per liter (µg/L) in shallow groundwater (around 10 ft).

Sunnyvale: EPA shares findings on vapor intrusion

By Kristi Myllenbeck | kmyllenbeck@community-newspapers.com (mailto:kmyllenbeck@community-newspapers.com)

POSTED: 05/20/2015 06:01:30 PM PDT **0 COMMENTS**

The U.S. Environmental Protection Agency has shared its findings on vapor intrusion at three Sunnyvale sites.

The EPA held a public meeting on May 14 at San Miguel Elementary School to educate nearby residents on vapor intrusion in an area referred to as the "triple site," which includes Advanced Micro Devices and 901-902 Thompson Place superfund site, the TRW Microwave superfund site and the Philips Semiconductors site, formerly Signetics Inc.

The EPA conducted a study during the winter months to gauge levels of possible vapor intrusion in homes and at San Miguel Elementary and three other campuses un the area: Rainbow Montessori School, The Kings Academy and Children's Creative Learning Center.

The groundwater below the triple site was found to be contaminated in 1982 as a result of a leak in an underground waste solvent storage tank. The groundwater was found to be contaminated by various volatile organic compounds, the most notable of which is trichloroethene, or TCE.

TCE is a volatile chemical mainly used in cleaning products, some of which can even be found in household items. Vapor from the groundwater can seep into the soil and potentially into the homes and buildings atop the site.

According to Rusty Harris-Bishop, superfund project manager, TCE vapor can enter homes and buildings in different ways.

"Vapors can enter homes through basements, crawl spaces, cracks in foundations or utility access points, and levels can vary throughout the year," he said.

Winter is the most vulnerable season for vapors to enter the home and be harmful because of little circulation of fresh air.

Out of the four schools and 54 homes sampled, three homes and one school showed evidence of TCE vapor intrusion, mostly in crawl spaces beneath the buildings. The 54 homes sampled are only one-eighth of the total homes located above the contaminated groundwater.

"The households that were sampled all met EPA's requirements for being protective, with most showing either no vapor intrusion or very low-level vapor intrusion that regardless meets EPA's most stringent health protection goals," Harris-Bishop said.

Rainbow Montessori School showed evidence of vapor intrusion in the crawl space beneath the Building L auditorium. As a result of these findings, a crawl space venting system is being designed for the building, according to the EPA.

It was also discovered that a rooftop ventilation system was stuck in the closed position, so that was fixed to provide more air circulation and ventilation for the building.

Harmful effects of TCE exposure can include increased cancer risk from long-term exposure and heart defects in fetuses from short-term exposure to pregnant women.

Outreach

The EPA will be conducting door-to-door outreach in the 700 block of Duane Avenue and nearby streets, which is across from the Montessori school with elevated levels of TCE vapor, to encourage the households to participate in sampling efforts.

"We did not get many residents in this area signing up for sampling during our last outreach effort in the neighborhood," Harris-Bishop said.

The sampling process is simple: A sampler is placed on a shelf or counter in the home for anywhere from 24 hours to a week.

"We want the community to know what activities are taking place in their neighborhood, what still needs to be done, and the risks posed by the site," said Harris-Bishop. "We also want the community to know that while there is no immediate health risk posed by the site, our goal is to eliminate any potential risks, and that our efforts to more fully know the extent of vapor intrusion issues will help us in that goal."

The three involved facilities are working to mitigate effects through cleanup efforts.

For more information, visit epa.gov/region09/triplesite (http://epa.gov/region09/triplesite) or call Melanie Morash, EPA project manager, at 415.972.3050.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 2015

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

We are reaching out to you a second time to request your participation in an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale, associated with three sites informally known by the collective term "Triple Site." The purpose of the study is to investigate the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

After requesting permission from owners, EPA conducted a first round of sampling in buildings and homes in your area this past winter, but did not get a response from you. **During the first round of testing, EPA found evidence that vapor intrusion was occurring in some buildings on the south side of Duane Avenue. Because of these findings, EPA recommends testing at all residences directly across Duane Avenue and nearby streets.** ***Therefore, as a precaution, EPA would like to test the air inside your home to determine if there is a buildup of trichloroethene (TCE) – the main chemical we are concerned about in this investigation. There is no cost to you for this testing, which we would like to do in the next few weeks.***

EPA's Sampling Access Agreement is attached to this letter. **Please sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address:** Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105. Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

The process for testing for TCE in indoor air is not disruptive, and simply involves placing a small sampling device in your home and in the crawlspace beneath your home over a 24-hour to 2-week period. EPA's goal is to conduct two sampling events, including at least one during the winter, and can work with you on your preferred sampling time. After testing, EPA will notify you of the results within a few weeks. If levels exceed EPA's health-based screening levels, we will present options to you as to how to proceed. Again, if we find a vapor intrusion issue, there will be no cost to you to put in place a solution. For the Duane Avenue buildings where elevated levels of TCE were found, the issue has been addressed in the short-term by improving ventilation. Long-term, permanent solutions for the affected buildings are also being developed.

If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. EPA also has a website for the project: www.epa.gov/region9/triplesite which has additional information. We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 2015

Revise to mail merge/include recipient name, address here

_____

Re: 2nd Request - Access for Indoor Air Sampling
Vapor Intrusion Investigation
Sunnyvale, California

To Whom It May Concern:

As you may already know, the U.S. Environmental Protection Agency (EPA) is conducting a study in Sunnyvale to determine whether there is a potential for vapors from contaminated groundwater to come up through the soil and accumulate in overlying buildings – a process called "vapor intrusion."

After requesting permission from property owners and tenants, EPA conducted a first round of sampling this past winter. **During the first round of testing, EPA found evidence that vapor intrusion was occurring in some buildings on the south side of Duane Avenue. Because of these findings, EPA recommends testing in all homes in the area.** ***As part of this investigation, EPA is seeking access to your property at the address indicated above in Sunnyvale, California, to test the indoor air to determine if there is a buildup of trichloroethene (TCE) – the main chemical we are concerned about in this investigation. There is no cost to you for this testing, which we would like to do in the next few weeks.***

EPA's Sampling Access Agreement is attached to this letter. **Please sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address:** Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105. Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

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We greatly appreciate your cooperation. Thank you very much.

Access for Indoor Air Sampling
Vapor Intrusion Investigation
Sunnyvale, California

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

June 2015

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

Attached to this letter is a fact sheet with information about an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale, associated with three sites informally known by the collective term "Triple Site."

The purpose of the study is to investigate the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

The majority of data that EPA has collected from Sunnyvale residences and schools in the last year has shown that levels of trichloroethene (TCE) in buildings are protective of public health. During the first round of testing, EPA found evidence that vapor intrusion was occurring in some buildings on the south side of Duane Avenue. This issue has been addressed in the short term by improving ventilation. Long-term, permanent solutions for the affected buildings are also being developed. EPA is conducting additional sampling in the neighborhood to confirm these findings and evaluate whether other mitigation systems may be appropriate to further reduce risk and ensure that levels of TCE in buildings are protective.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov.

EPA also has a website for the project: www.epa.gov/region9/triplesite which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

2nd Indoor Air Sampling Request

For Homes in the Following Areas: Brea, Carmel, East Duane (700s), San Juan (600s), San Jule, San Justo, San Luisito, San Miguel (600s)

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • June 2015

Philips, AMD 901-902 Thompson Place, TRW Microwave Superfund Sites ("Triple Site"), Sunnyvale, California

The U.S. Environmental Protection Agency (EPA) is again requesting permission from certain residents in the Duane/San Miguel Avenue neighborhood to collect indoor air samples. This sampling is part of a study of the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into indoor air). EPA conducted a first round of sampling this past winter but most of the residences on the northern side of Duane Avenue (between San Juan and San Miguel, north to Brea and Carmel) did not sign up for sampling. **During the first round of testing, EPA found evidence that vapor intrusion was occurring in some buildings on the south side of Duane Avenue. Based on the first round of sampling, EPA is recommending testing in all homes in the area. There is no cost to owners or tenants selected for this testing. To sign up for the sampling, please contact Melanie Morash, the EPA Project Manager, at (415) 972-3050 or by e-mail to morash.melanie@epa.gov**

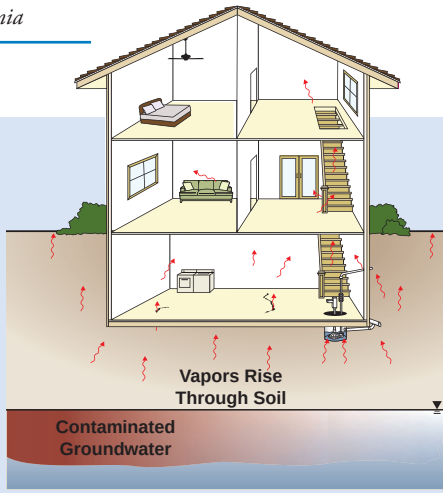


Figure 1: Vapor intrusion into a residence

TCE and Vapor Intrusion

The main chemical of concern in this investigation is trichloroethene (TCE). TCE is a type of volatile organic chemical (VOC) which can move as vapors from groundwater through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air (See Figure 1). If this happens, and if the levels of VOCs are high enough and prolonged enough, it may create a health risk.

TCE is present in the groundwater due to historical semiconductor and other electronics manufacturing operations from the early years of Silicon Valley (dating back to the 1960s). Since the 1980s, the parties responsible for the environmental cleanup have been conducting activities to contain and clean up TCE in the shallow groundwater.

Note: Your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

What Was Done Prior to 2015?

Annual indoor air sampling has been conducted for 10 years at the Montessori school buildings on Duane Avenue because these buildings are over the highest concentration in groundwater. Results from this testing showed that levels of TCE are very low, and protective of children's health.

Why Sample Again?

This past year EPA strengthened its protective levels for TCE, due to new information about potential cancer and other health risks related to TCE exposure.

EPA has also learned more about how vapor intrusion can vary throughout the year, with the highest potential during winter, when homes and classrooms are more tightly sealed and vapors may build up. In addition, EPA has developed a more comprehensive testing approach.

Results of School Sampling

The good news is that the majority of samples showed very low concentrations which do not pose a health risk, and we acted quickly to respond to one Duane Avenue school sample (from an auditorium) that was elevated – promptly lowering the levels by fixing the ventilation system. **EPA believes that there was not a significant exposure to students or teachers because the auditorium was used infrequently and when it was used, for only short periods of time.**

EPA sent letters home with all of the school children and met with parents to share the sampling results, answer questions, and outline EPA's plans for a permanent, mitigation system at the affected school building. In the meantime, additional sampling continues at all of the neighborhood schools to evaluate whether additional mitigation systems would be appropriate to further reduce risk.

Results of Home Sampling

During the first round of neighborhood indoor air sampling in January-March 2015, 54 households (out of 414 total) were sampled. The majority of households showed no evidence of vapor intrusion, having levels similar to outdoor air (which has low concentrations of TCE typical of an urban neighborhood in the South Bay). Three households had levels of TCE that were slightly elevated, though still meeting EPA's health protection goals. EPA plans to re-sample these households in June, and is recommending 2nd round winter testing at all households in the neighborhood Dec 2015 – Feb 2016.

The "Triple Site"

Informally known by the collective term "Triple Site", the site includes three groundwater TCE sites – the Advanced Micro Devices 901/902 Thompson Place Superfund Site (AMD 901/902 Site), the Philips (formerly Signetics) Site (Philips Site), and the TRW Microwave Superfund Site (TRW Site).

The Triple Site also includes the area of the neighborhood outside these facilities' property boundaries, which has been impacted by TCE-containing groundwater from the three source sites. This area includes the neighborhood around Duane/San Miguel Avenue to just past Highway 101 to the north (Lakehaven Drive), and between the Sunnyvale East Drainage Channel on the west and San Miguel Avenue on the east (see map). Concentrations of TCE in the shallow groundwater in this part of the neighborhood are elevated above the acceptable level of 5 micrograms per liter (ug/L).

What Happens Next

EPA is looking to sample homes within the entire sampling area shown, and residents can call anytime to sign up for sampling. **EPA is particularly interested in testing those residences on the north side of Duane (the 700 block), and those households between the 600 blocks of San Juan and San Miguel, to Carmel and Brea. This area also includes the residences on San Jule, San Justo, and San Luisito.** To sign up for the sampling, please call (or e-mail) and leave a message with your name, telephone number, mailing address and/or e-mail address and the best time to reach you.

With residents' permission, two rounds of sampling will be conducted – one this spring and one during this coming winter. Households that were sampled during our first sampling round this past winter will be sampled again the following winter, with the exception of the three households with slightly elevated levels of TCE that are being evaluated further this month. The process for testing for TCE in indoor air is not disruptive, and simply involves placing a small sampling device in the home (for example, on a shelf or counter) and in the crawlspace beneath the home over a 24-hour to 2-week period. During the testing, residents should avoid using certain chemicals which can interfere with the testing (such as on dry-cleaned clothing, paints, or carpet cleaners). EPA will notify each resident individually of the results within a few weeks after the testing. If a vapor intrusion issue is found, there will be no cost to residents or property owners to put in place a solution. EPA will also distribute another fact sheet to the neighborhood in late 2015 with an update on the investigation and next steps for the community.

Who Do I Contact If I Would Like My Home Sampled?

Please contact any of the following if you would like your home sampled:

Melanie Morash
EPA Project Manager
(415) 972-3050
morash.melanie@epa.gov

Alejandro Diaz
EPA Community Involvement Coordinator
(415) 972-3242
diaz.alejandro@epa.gov

Visit EPA's website for more information on the Triple Site: **www.epa.gov/region9/triplesite**

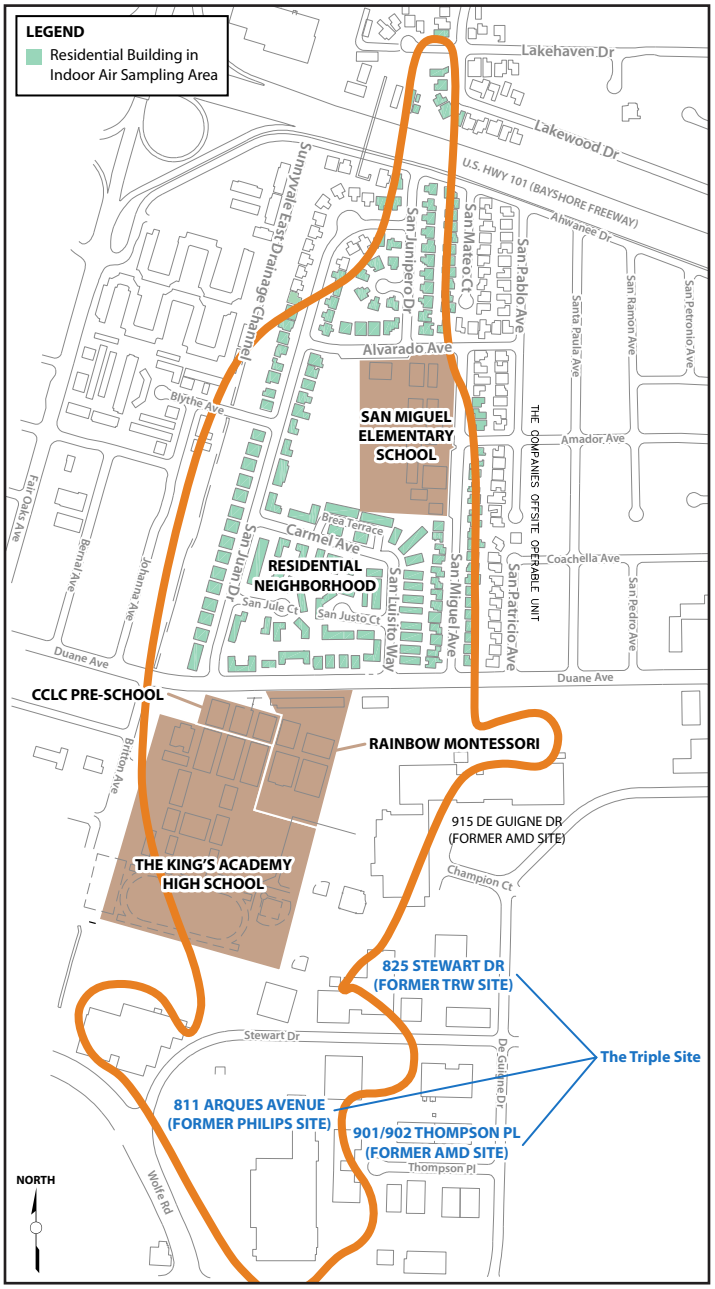


Figure 2: Indoor air sampling area. Approximate extent of TCE contamination above 5 micrograms per liter (µg/L) in shallow groundwater (around 10 ft).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

Aug. 12, 2015

Sunnyvale, CA

Re: Vapor Intrusion Indoor Air Sampling Results for Residential Building #051 (RES#051) Sunnyvale, California
Philips, Advanced Micro Devices 901-902, TRW Microwave Superfund Sites ("Triple Site")

Dear

Thank you for your cooperation and participation in the U.S. Environmental Protection Agency's (EPA) vapor intrusion indoor air sampling investigations in Sunnyvale, California. As a follow-up to our April 3, 2015, telephone call, this letter confirms in writing the results of EPA's indoor air sampling for trichloroethene (TCE), conducted at your home on February 11, 2015.

Your TCE Indoor Air Results: EPA considers TCE levels below 2 micrograms per cubic meter ($\mu g/m^3$) to be health protective. Low levels of TCE were detected in the air inside your home and in the crawlspace beneath your building (up to 0.20 $\mu g/m^3$ in indoor air and up to 0.32 $\mu g/m^3$ in crawlspace air). **These concentrations meet EPA's short-term health protective screening level for TCE (2 $\mu g/m^3$) and EPA's long-term health protective screening level (0.48 $\mu g/m^3$). However, because EPA has learned more about how these levels can vary over time, EPA would like to test your home again next winter to confirm these results.**

Background on EPA Investigation: As you may know, EPA has been investigating the potential for vapor intrusion—a process where vapors from groundwater contamination may migrate into the indoor air in buildings—in the Duane/San Miguel Avenue neighborhood. Please be aware that your drinking water is not affected by contaminants in groundwater. Your water for drinking, bathing, and watering gardens comes from the Hetch Hetchy Reservoir in the Sierra Nevada.

Health Protection Goals: EPA's goal for Superfund site-related chemicals is to keep exposures as low as reasonably possible. EPA considers the safe range of TCE concentrations for residences to be below 2 $\mu g/m^3$ (the short-term screening level). When an indoor air sample is collected and shows a concentration above the long-term screening level (0.48 $\mu g/m^3$) but below 2 $\mu g/m^3$, EPA uses this information to decide whether additional sampling is necessary to confirm that levels continue to remain protective over time. More information about TCE can be found at this website: http://www.epa.gov/teach/chem_summ/TCE_summary.pdf

More About Your Results: Low levels of TCE were detected in the air in your home during the February 2015 sampling event. The sample results meet EPA's short-term health protective screening level for TCE (2 $\mu g/m^3$) and EPA's long-term health protective screening level (0.48 $\mu g/m^3$). The table below shows the sampling results for your home.

One other compound that is not associated with the Triple Site was detected (perchloroethene or PCE) at low concentrations (up to 0.45 $\mu g/m^3$ in the crawlspace) that are below the long-term health protective screening level of 0.48 $\mu g/m^3$.

PCE and TCE belong to a chemical category called VOCs (volatile organic compounds), which are contained in products that may be commonly found around the home (such as silicone lubricants, spot removers, adhesives, wood cleaners, and dry-cleaned clothing).

Additionally, because PCE is not found in the groundwater beneath your neighborhood, and because the PCE concentration in one of your crawlspace samples is above the maximum outdoor concentration of PCE measured in your neighborhood, it is possible that the low levels of PCE detected in your crawlspace are related to an indoor source of the chemical.

Identifying and removing the product in your home that contains the PCE (if one exists) would likely result in a decrease in the PCE levels measured, and we would be happy to answer any questions you might have about indoor sources of PCE or other VOCs.

Sample Location	TCE Concentration February 2015	PCE Concentration February 2015
Indoor Air Sample (24-hr sample)	0.20 µg/m^3	0.19 µg/m^3
Indoor Air Sample (6-day sample)	0.089 µg/m^3	0.082 µg/m^3
Crawlspace Air Sample (24-hr sample)	0.25 µg/m^3	0.16 µg/m^3
Crawlspace Air Sample (6-day sample)	0.32 µg/m^3	0.45 µg/m^3
Outdoor Air Sample—Maximum (a neighbor's backyard)	0.29 µg/m^3	0.20 µg/m^3
EPA Screening Levels		
Short-term Screening Level	2.0 µg/m^3	36.5 µg/m^3
Long-term Screening Level	0.48 µg/m^3	0.48 µg/m^3

TCE Vapor Intrusion Findings: EPA considers these concentrations protective of your health and they meet EPA's requirements for safeguarding against potential health effects due to TCE vapor intrusion. **However, because EPA has learned more about how these levels can vary over time, EPA would like to test your home again next winter to confirm these results.**

Next Steps: We will contact you again in December to arrange the next rounds of testing. If you have any questions, please contact me at (415) 972-3050 or by email to morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by email to diaz.alejandro@epa.gov. EPA has a website for this project, which is regularly updated with the most current information available: www.epa.gov/region9/triplesite. Thank you again for your cooperation and participation in this air sampling investigation.

Sincerely,

Melanie Morash

Melanie Morash
EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street • San Francisco, CA 94105

September 2015

Rainbow Montessori Child Development Center
Sunnyvale, California

Dear Teachers:

We are sending this letter to update you on the trichloroethene (TCE) indoor air testing that is being conducted by the U.S. Environmental Protection Agency (EPA) at your school. This work is associated with the long-term groundwater cleanup in the neighborhood.

EPA is working diligently to ensure that your classrooms are being protected from any chemicals of concern in the groundwater under the school. Our sampling shows evidence of chemicals in the indoor air at Rainbow Montessori, indicating that the phenomenon called vapor intrusion may be occurring. We have worked with the school administration to improve the ventilation systems as a temporary measure – our testing confirms that supplying outdoor air to the classrooms maintains acceptable air quality for the children and teachers. We are continuing to investigate to better understand the issue, in addition to looking for similar chemicals commonly found in cleaning products, art supplies, etc. In the meantime, we are conducting monthly air testing throughout the school and designing permanent solutions for the Rainbow Montessori buildings.

What You Can Do To Help

To continue providing fresh air, it is important that the ventilation system operates throughout the school day. Operation of the ventilation system is important for maintaining acceptable air quality. If you observe that the ventilation system is off, then you should promptly report that the system is off by calling Dave Rodenborn at (510) 565-6186.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building, it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it may create a health risk.

Note: Your drinking water is not affected by this contamination. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Contact For More Information

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to *morash.melanie@epa.gov* if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, at (415) 972-3242 or by e-mail to *diaz.alejandro@epa.gov*.

EPA also has a website for the project:
www.epa.gov/region9/triplesite which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

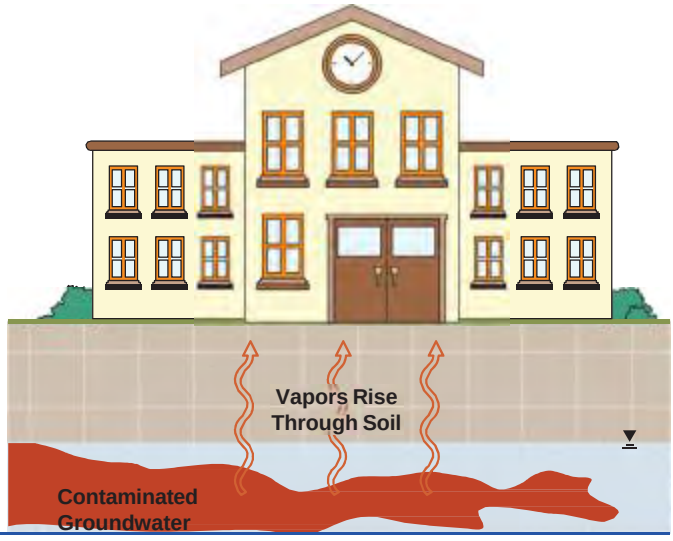


Figure: Vapor intrusion into a building

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

September 2015

Revise to mail merge/include recipient name, address here

Re: 3rd Request - Access for Indoor Air Sampling – Insert Street Address of Building
Vapor Intrusion Investigation
Sunnyvale, California

To Whom It May Concern:

As you may already know, the U.S. Environmental Protection Agency (EPA) is conducting a study in Sunnyvale to determine whether there is a potential for trichloroethene (TCE) vapors from contaminated groundwater to come up through the soil and accumulate in overlying buildings – a process called "vapor intrusion."

After requesting permission from property owners and tenants, EPA conducted several rounds of sampling this year. **During these rounds of testing, EPA found evidence that vapor intrusion was occurring in some buildings on the south side of Duane Avenue and in certain homes on San Miguel Avenue (odd-numbered side) and San Luisito Avenue (even-numbered side).**

The results of the home sampling showed that TCE levels indoors meet EPA's health protection requirements. ***However, elevated levels of TCE vapors were found in crawlspaces underneath some buildings, indicating a potential for unacceptable vapor intrusion to occur in the future (for example, during the wintertime when doors and windows are opened less frequently and houses are more tightly sealed).*** For the Duane Avenue buildings where elevated levels of TCE were found, the issue has been addressed in the short-term by improving ventilation. Long-term, permanent solutions for the affected buildings are also being developed.

EPA is continuing to investigate these buildings to better understand what is occurring and decide on next steps. **In the meantime, EPA recommends testing in all homes in the area.**

As part of this investigation, EPA is seeking access to your property at the address indicated above in Sunnyvale, California, to test the indoor air to determine if there is a buildup of TCE. There is no cost to you for this testing, which we would like to do in the next few weeks.

EPA's Sampling Access Agreement is attached to this letter. **If you wish to participate in the testing, please sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address:** Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105.

Access for Indoor Air Sampling
Vapor Intrusion Investigation
Sunnyvale, California

The process for testing for TCE in indoor air is not disruptive, and simply involves placing a small sampling device in your home and in the crawlspace beneath your home over a 24-hour to 2-week period. If we identify any products in your home that contain TCE or similar chemicals, we will ask your permission to temporarily remove these from the home before putting out our samples. EPA's goal is to conduct two sampling events, including at least one during the winter, and can work with you on your preferred sampling time. After testing, EPA will notify you of the results within a few weeks. If levels exceed EPA's health-based screening levels, we will present options to you as to how to proceed. Again, if we find a vapor intrusion issue, there will be no cost to you to put in place a solution.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. EPA also has a website for the project: www.epa.gov/region9/triplesite which has additional information.

We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

EPA Request for Indoor Air Sampling

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • Fall 2014

Triple Site, Sunnyvale, California

The U.S. Environmental Protection Agency (EPA) is requesting permission from residents in the Duane/San Miguel Avenue neighborhood to collect indoor air samples this fall and winter. There is no cost to owners or tenants for this testing, which EPA would like to conduct within the next few weeks. This sampling is part of an investigation of the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air). As a precaution, EPA would like permission to test the air inside residences to determine if there is a buildup of trichloroethene (TCE).

TCE and Vapor Intrusion

The main chemical of concern in this investigation is TCE. TCE is a type of volatile organic chemical (VOC) which can move as vapors from groundwater through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air (See Figure 1). If this happens, and if the levels of VOCs are high enough and prolonged enough, it may create a health risk.

TCE is present in the groundwater due to historical semiconductor and other electronics manufacturing operations from the early years of Silicon Valley (dating back to the 1960s). Since the 1980s, the parties responsible for the environmental cleanup have been conducting activities to contain and clean up TCE in the shallow groundwater.

What Has Already Been Done?

Indoor air sampling has already been conducted at the Montessori school buildings on Duane Avenue because these buildings are over the highest concentration in groundwater. Results from this testing show that levels of TCE are very low, and protective of children's health. The good news so far is that air testing at homes in another Sunnyvale neighborhood this past year (for a similar TCE cleanup site) showed no evidence of vapor intrusion.

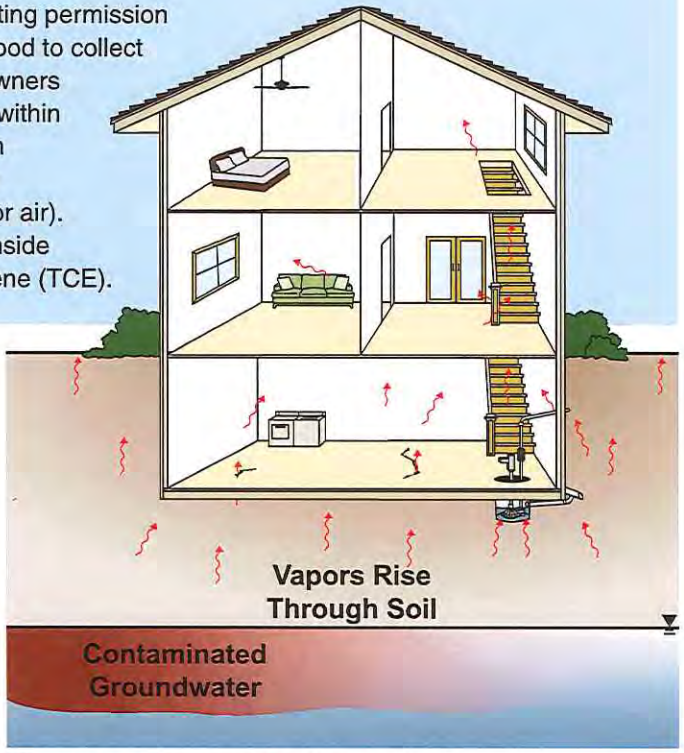


Figure 1: Vapor intrusion into a residence

Why Sample Again?

This past year EPA strengthened its protective levels for TCE, due to new information about potential cancer risks related to TCE exposure. New levels that would warrant an accelerated EPA response were also developed for short-term risks, including liver and kidney effects and organ problems in babies whose mothers were exposed during the first trimester of pregnancy.

EPA has learned more about how vapor intrusion can vary throughout the year. This is why EPA is planning to sample at schools and residences this fall and winter to confirm that the new, lower levels for TCE exposure are not being exceeded.

Note: Your drinking water is not affected by this contamination. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

The "Triple Site"

Informally known by the collective term "Triple Site", the site includes three groundwater TCE sites – the Advanced Micro Devices 901/902 Thompson Place Superfund Site (AMD 901/902 Site), the Philips (formerly Signetics) Site (Philips Site), and the TRW Microwave Superfund Site (TRW Site).

The Triple Site also includes the area of the neighborhood outside these facilities' property boundaries, which has been impacted by TCE-containing groundwater from the three source sites. This area includes the neighborhood around Duane/ San Miguel Avenue to just past Highway 101 to the north (Lakehaven Drive), and between the Sunnyvale East Drainage Channel on the west and San Miguel Avenue on the east (see map). Concentrations of TCE in the shallow groundwater in this part of the neighborhood are elevated above the acceptable level of 5 micrograms per liter (ug/L).

What Happens Next

EPA is looking to sample residential units within the sampling area shown below. Please contact Melanie Morash, EPA Project Manager or Alejandro Diaz, EPA Community Involvement Coordinator if you would like your home sampled. Please call (or e-mail) and leave a message with your name, telephone number, mailing address and/or e-mail address and the best time to reach you.

Sampling will be conducted during the colder, winter months and involves placing a sampling device in the home (for example, on a shelf or counter) and in the crawlspace beneath the home over a 24-hour to 2-week period. EPA's goal is to conduct two sampling events spaced several weeks apart and can work with residents on their preferred sampling time. EPA will notify each resident individually of the results within a few weeks after the testing. If levels exceed EPA's health-based screening levels, EPA will present options to each resident as to how to proceed. EPA will also distribute another fact sheet to the neighborhood in early 2015 that summarizes the results of this investigation and next steps for the community.

Who Do I Contact If I Would Like My Home Sampled?

Please contact any of the following if you would like your home sampled:

Melanie Morash
EPA Project Manager
(415) 972-3050
morash.melanie@epa.gov

Alejandro Diaz
EPA Community
Involvement Coordinator
(415) 972-3242
diaz.alejandro@epa.gov

Visit EPA's website for more information on the Triple Site:
www.epa.gov/region9/triplesite

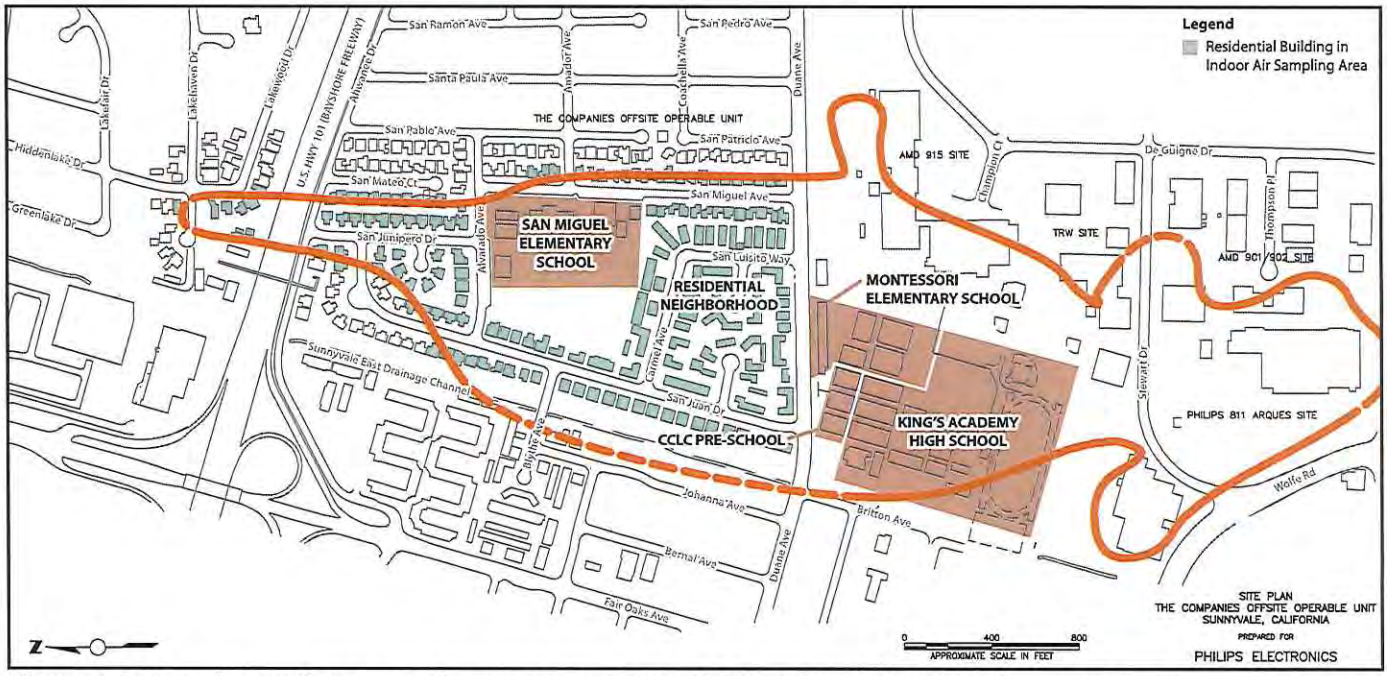


Figure 2: Indoor air sampling area and approximate extent of TCE contamination in shallow groundwater

SAMPLING ACCESS AGREEMENT

This Sampling Access Agreement ("Agreement") is entered into on this _____ day of _____ 2014, between _____ ("Owner") and the U.S. Environmental Protection Agency ("EPA").

Terms and Conditions

1. Access. Owner grants EPA and its designated agents, contractors, and representatives access to the property located at _____ in Sunnyvale, California (the "Property"), for the purpose of obtaining indoor air samples as part of EPA's indoor air quality investigations in Sunnyvale, California. Access to the Property will be at such times and locations and along such routes as are acceptable to Owner for the sole purpose of conducting indoor air sampling. All sampling conducted under this Agreement shall be without cost to Owner. No other activities shall be conducted without the consent of Owner.

2. Non-Interference. EPA's indoor air sampling work will at all times be conducted in such a way as to minimize interference with the Owner's use and enjoyment of the Property. EPA will at all times keep the Property free from accumulations of materials.

3. Restoration. When EPA's indoor air sampling work has finished, EPA shall remove any and all materials brought onto the Property by EPA.

4. Termination. This Agreement will terminate when EPA has completed the indoor air sampling activities.

5. Warranty. Owner warrants and represents that he/she: (a) is the owner of the Property and has the authority to enter into this Agreement to grant access to EPA to perform indoor air sampling work; (b) will refrain from using common sources of TCE during the sampling period; and (c) will not move, tamper with, or damage sampling equipment.

6. Choice of Laws. This Agreement shall be governed by and interpreted in accordance with federal law and, where appropriate, the laws of the State of California.

7. Entire Agreement. This Agreement constitutes the entire agreement of the parties and may not be amended or modified, except in writing and signed by the parties.

OWNER	EPA
Signature:_____	Signature:_____
Name:_____	Name:_____
Date:_____	Title:_____
	Date:_____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

September 2015

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

We are reaching out to you a third time to request your participation in an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale. The purpose of the study is to investigate the potential for trichloroethene (TCE) vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

After requesting permission from property owners and tenants, EPA has conducted several rounds of sampling this year in buildings and homes in your area. **During these rounds of testing, EPA found evidence that vapor intrusion may be occurring in some buildings on the south side of Duane Avenue and in certain homes on San Miguel Avenue (odd-numbered side) and San Luisito Avenue (even-numbered side).**

The results of the majority of home sampling, however, do show that TCE levels indoors meet EPA's health protection requirements. ***Some elevated levels of TCE vapors were found in crawlspaces underneath some buildings, which may indicate a potential for vapor intrusion to occur in the future (for example, during the wintertime when doors and windows are opened less frequently and houses are more tightly sealed).***

EPA would like to continue investigating to better understand what is occurring and plan next steps. In the meantime, EPA recommends testing at all residences in the area. *There is no cost to you for this testing, which we would like to do in the next few weeks.*

EPA's Sampling Access Agreement is attached to this letter. **Property owners should sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address: Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105.**

The process for testing for TCE in indoor air is not disruptive, and simply involves placing a small sampling device in your home and in the crawlspace beneath your home over a 24-hour to 2-week period. EPA's goal is to conduct two sampling events, including at least one during the winter, however, we can work with you on your preferred sampling time. After testing, EPA will notify you of the results within a few weeks. If levels exceed EPA's health-based screening levels, we will present options to you on how to proceed.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards. If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. EPA also has a website for the project: www.epa.gov/region9/triplesite which has additional information. We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

Building Trust at the Triple Site, Sunnyvale, California

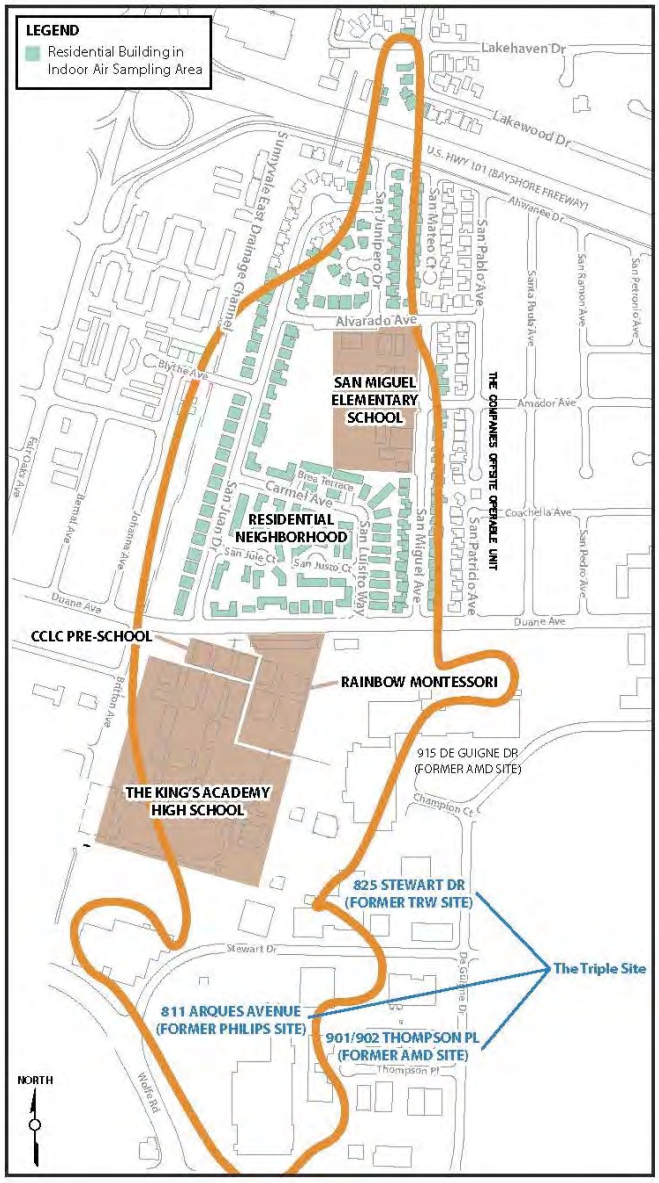
By Lenny Siegel
October, 2015

There are four schools and more than four hundred homes above the Triple Site trichloroethylene (TCE) plume in Sunnyvale, California. Unlike Winston-Salem, North Carolina, where news coverage triggered widespread anxiety, the Sunnyvale community did not panic when U.S. EPA's expanded vapor intrusion investigation hit TV screens. The response was more measured, even though trichloroethylene is believed to pose more of a health threat than tetrachloroethylene (PCE)—the principal contaminant at the Kaba-Ilco plume in Winston-Salem. (See my report at http://www.cpeo.org/pubs/HaLo.pdf.) In fact, investigators actually found unacceptable levels of TCE indoors at five school buildings. Those exceedances, as well as elevated TCE levels in five homes, are being addressed, and EPA-led sampling continues with community cooperation and support. I attribute the success of the Triple Site program to EPA Region 9's proactive and transparent approach.

Ironically, the Bay Area Regional Water Quality Control Board, supported by EPA, conducted one of Silicon Valley's first vapor intrusion investigations at this site, back in 1991. Despite modeling showing excess lifetime cancer risks to the neighborhood on the order of one in 10,000, it concluded on the basis of soil vapor sampling, conducted with flux chambers, that the risk was less the one in a million. The Board and the companies moved forward with groundwater cleanup, but not until late 2013, when U.S. EPA sent a letter to the Water Board requesting that it re-open investigations at several Silicon Valley Superfund sites, did the vapor intrusion issue rise to the surface again.

San Miguel School

Normally when I visit vapor intrusion sites outside of Mountain View, I take a plane. The San Miguel neighborhood of Sunnyvale, however, is just a bike ride away. The EPA team conducting the vapor intrusion investigation contains many of the same people involved in my own community, where EPA has directly overseen cleanup for three decades and addressed vapor intrusion since 2002.



Site History

The three source areas of the Triple Site are former factories once operated by TRW Microwave, now a subsidiary of Northrop Grumman, and two semiconductor manufacturers, Advanced Micro Devices (AMD) and Signetics, which was taken over by Dutch electronics giant Philips. These three companies remain the Responsible Parties. Site investigations began way back in February, 1982, with discovery of a leaking underground solvent waste storage tank at Philips. Investigators soon found leaks at AMD, and they identified the TRW release in April

1983. They also found that the three underground plumes of TCE and other chemicals had merged.

The Regional Water Board issued a joint cleanup and abatement order to all three companies in June, 1984. Reportedly this was only the second such order the Board issued for underground tank-leak contamination. The Water Board identified an operable unit for each source area, and it established the Offsite Operable Unit covering about 100 acres to the North, downgradient from the factories, where at the time TCE in groundwater exceeded 5 parts per billion (ppb). The offsite area also included the former campus of Sunnyvale High School, closed in 1981, used then as a research and development facility by Westinghouse. It also contained San Miguel School, at the time serving as a day care center.

King's Academy on the former Sunnyvale High School site

EPA proposed AMD for the Superfund National Priorities List (NPL) in 1984 and finalized its listing in 1986. It proposed TRW in 1988 and finalized the listing in 1990. Finally, EPA proposed the Philips site for the NPL in 1989, but it decided not to make it final because it was being regulated under the Corrective Action provisions of the Resource Conservation and Recovery Act. However, under a regional agreement between EPA and the Water Board, the Water Board remained the lead agency.

In June 1991 the Water Board finalized a Remedial Action Plan, and on September 11, 1991 U.S. EPA issued a Record of Decision (ROD) concurring with the Water Board plan. The principal remedy adopted was groundwater extraction and treatment, using air stripping and carbon adsorption, along with continuing soil removal and some soil vapor extraction. Actual extraction and treatment had begun as an interim remedy in 1986.

Early Vapor Studies

The agencies also evaluated health risk from toxic vapors, both from possible treatment system emissions and from direct releases through the soil from groundwater. However, nowhere in the ROD does the term "vapor intrusion" occur.

The Water Board conducted modeling showing conservatively that area residents faced a one in 10,000 excess lifetime cancer risk due to vapor exposure. Schoolchilden at the San Miguel school daycare center were believed to face a risk of less than one in a million, based on a maximum of four years exposure at eight hours a day.

In early 1991 the Water Board used flux chambers to measure vapor rising from the soil in the offsite area. Because it was cold and rainy on the first sampling day, it conducted a second round of vapor-flux sampling in March. Based on those results, it concluded, based upon a model predicting migration into overlying buildings, that the cancer risk to residents was less than one in a million. The ROD explained, "The other [sampling] option considered was the direct measurement of indoor air from selected structures. This approach was rejected due to a lack of sampling protocol for indoor air and the possible contamination of indoor air by indoor sources." The Water Board immediately reported the "all clear" finding to the press and public, but it did agree to limited additional soil flux monitoring.

The Water Board also explained,

> One of the chemicals predicted by the model, trichloroethylene (TCE) was detected at low concentrations in one sample from near San Miguel School. This detection of TCE at single sample point does not prove that TCE is escaping from the groundwater. The concentration detected is less than the maximum TCE concentration detected in air at the nearby Bay Area Air Quality Management Board (BAAQMD) air monitoring station in San Jose.

Early Community Engagement

Since the early 1980's, local and regional newspapers and broadcast news have given extensive coverage to groundwater contamination. The Triple Site story repeatedly made front page on regional newspapers. In Sunnyvale, there were a series of community meetings, some sponsored by government agencies, others called by community groups. For example, the *Peninsula Times Tribune* reported in July, 1984, "More than 200 people jammed a hot church auditorium to demand that more be done to clean up toxic chemicals threatening Santa Clara Valley's water supplies." Two members of Congress, Republic Ed Zschau and Democrat Norman Mineta, attended that meeting. I think I did, too.

Activists from throughout Silicon Valley united to form the Silicon Valley Toxics Coalition. The Coalition successfully pressed for legislation to prevent future leaks and spills, and for a quarter century it helped neighborhood groups demand cleanup throughout the Valley. It led the community campaign at the Triple Site, working with the newly formed San Miguel Neighborhood Association. Association members requested indoor air testing.

Furthermore, as early as June, 1984 Sunnyvale city officials "urged other public agencies to take more aggressive steps, including legal action if necessary, to identify and clean up toxic chemicals that have seeped into the ground water beneath the city." They told the press that they had learned about the groundwater contamination by reading the newspapers.

200 demand toxic cleanup

By Ann Gibbons
Times Tribune staff

More than 200 people jammed a hot church auditorium in Sunnyvale Tuesday night to demand that more be done to clean up toxic chemicals threatening Santa Clara Valley's water supplies.

Most of the people urged the government to immediately start the cleanup of toxic chemicals that have leaked into the soil and ground water at 120 sites in the Bay Area. They called upon the federal Environmental Protection Agency specifically to join state and local efforts to clean up the contaminated sites.

"The state and local government agencies, as hard as they try, don't have the resources to effectively contain what's left to clean up the 100 or so spills in the county," said Ted Smith, chairman of the Silicon Valley Toxics Coalition, a citizens' watchdog group that organized Tuesday night's meeting.

It was the second time residents of the valley had met at St. Mark's Lutheran Church since high levels of the toxic solvent trichloroethylene (TCE) had been found in 30 of 36 private drinking water wells tested in Mountain View three weeks ago. No contamination has been found in public drinking water supplies.

Some of the residents at the meeting were angry and demanded that government agencies do more to protect their drinking water and their health.

They called on two congressmen at the meeting — Ed Zschau, R-Los Altos, and Norman Mineta, D-San Jose — to make commitments now to get federal dollars to clean up the toxic waste sites. The residents also criticized government agencies and industry for doing too little too late to protect underground drinking-water supplies.

"If companies are going to use chemicals, they need to make darn sure we don't end up drinking them," said Bonnie Jones. Her family was warned three weeks ago to

Please see TOXIC, A-8

Harry Seraydarian
... sites must be on U.S. list.

Ted Smith
... chairman of watchdog grou

cont.

1-4-84

Times Tribune staff photo by Sam Farencich

Sunnyvale resident Elaine Davidson, a former employee of Signetics Corp., told more than 200 people at a meeting in Sunnyvale Tuesday night that electronics companies have been sloppy with toxic chemicals and now should be held responsible for the cleanup of toxic leaks. She said she was told to dump solvents down the drain into sewer lines when she worked at Signetics in the 1970s.

As the pump-and-treat remedies were put in place and the Water Board reported that the community was safe from vapor exposure, public concern diminished.

Region 9's Vapor Intrusion Program

About two miles away, however, in my community of Mountain View, public engagement remained strong. Mountain View is home to the MEW Regional Plume (named for the three surface streets that mark its rough boundaries). Not only is the MEW Plume larger, with greater contaminant concentrations, but the plume caused by releases from several electronics companies flowed under U.S. Highway 101 to merge with contamination from the Moffett Field Naval Air Station. In the early 1990s, Moffett Field's Technical Review Committee became the national model for Defense Department-sponsored Restoration Advisory Boards, and because the Navy had other environmental issues, including three landfills and 400 acres of polluted wetlands, community interest in cleanup remained strong even after plume-wide groundwater

pump-and-treat systems were activated in 1998. Furthermore, from the mid-1990s the Silicon Valley Toxics Coalition received a series of Technical Assistance Grants from U.S. EPA for both the MEW Superfund Study Area and for Moffett Field. (For background, see http://www.cpeo.org/pubs/RegionalPlume.pdf.)

So in 2002, the Mountain View community was ready when EPA launched there two of its earliest major vapor intrusion investigations anywhere in the country. When local citizens got wind of the new investigations, we requested a public meeting. EPA convened a meeting in January, 2003, and over 400 people attended. While some were primarily concerned about MEW and Moffett, a majority were from the new, upscale Whisman Station transit-oriented housing development located above and around GTE's smaller, lower concentration TCE plumes, under EPA oversight through a voluntary RCRA agreement. Public interest and support propelled the vapor investigations forward.

Since then, the Region 9 (Pacific Southwest) EPA team developed a vapor intrusion Record of Decision Amendment in 2010, pioneered an arrangement with the City of Mountain View requiring vapor mitigation in new construction within or near contaminated areas, and established sampling protocols for indoor air testing. In commercial buildings it routinely required that indoor sampling be conducted with HVAC (heating, ventilation, and air conditioning) systems on and off, and it proved the reliability of low-cost, minimally intrusive passive air samplers to test for TCE inside homes. Regional staff consider the MEW program the "gold standard" in vapor investigation.

Meanwhile, in September 2011 EPA's Integrated Risk Information System (IRIS) program had finally released its toxicity assessment for TCE. IRIS classified TCE a *known* human carcinogen, calculated a more protective cancer slope factor, and concluded that pregnant women who inhale TCE at low concentrations over a short period have an increased risk of bearing children with heart malformations (cardiac birth defects). Toxicologists from Region 9 and the state of California began applying those findings to ongoing vapor intrusion responses.

In December 2013, Region 9 sent a letter to the Water Board recommending that it use its MEW-tested vapor intrusion approach at nine Silicon Valley Superfund projects. Key elements included short-term action levels for TCE, cold weather sampling of indoor air, commercial building sampling with the HVAC system turned off, and evaluation of all buildings within the 5 ppb contour line for TCE in groundwater. Identified by AMD, the Triple Site topped the letter's alphabetical list. EPA followed up those Guidelines with its July, 2014 memo on Near-Term TCE Inhalation Exposures.

Meanwhile, at the Triple Site

Meanwhile, things were changing at the Triple Site. A big-box Lowe's hardware store had been built on the former Philips property. (That's where I bought my refrigerator and dishwasher.) Westinghouse had left the high school site, and in 1992 the King's Academy, a Christian high school, had taken over a majority of the campus, with the rest later occupied by a day care center and Rainbow Montessori School. San Miguel School reopened as a public school serving a community that is roughly half Hispanic. Nearby, the residential redevelopment of

another AMD Superfund site, more recently occupied by its joint venture Spansion semiconductor, was delayed by Sunnyvale's reluctance to receive contaminated property as parkland.

Pump-and-treat continued unabated, and the vapor intrusion investigation was proceeding slowly. Under Water Board direction, Philips' consultant had conducted soil vapor sampling at the Rainbow Montessori portion of the Sunnyvale High School site in February 2004. Indoor air sampling found elevated TCE inside one building, but mproved ventilation brought the level down.

Rainbow Montessori School

Subsequent indoor air samples showed that TCE and other substances remained below applicable long-term screening levels, but as far as I can tell all sampling was conducted in April, May, or June. Though I don't believe enough research on the subject has been conducted in California, the rule of thumb nationally is that indoor air samples should be taken during the winter months to capture the high levels caused by elevated pressure differentials between soil gas and indoor air.

In January 2014 the Water Board sent letters to the Responsible Parties requiring that they incorporate EPA's newly documented requirements into their vapor intrusion evaluations. Philips filed a Petition for Review at the end of February, but the Water Board rejected it because

it was more than two weeks beyond the submittal deadline. In May Philips' consultant submitted a new vapor intrusion workplan for the Offsite Operable Unit, but it did not meet the regulators' standards. Among other issues, it did not call for sampling at San Miguel School, and there was no plan to sample any of the buildings at the four schools with HVAC systems turned off.

So in August, U.S. EPA, at the request of the Water Board, formally assumed lead agency status for the Triple Site cleanup. The Board's letter summarized the reasons:

- Recent U.S. EPA Region IX vapor intrusion guidelines have resulted in a significant expansion of the vapor intrusion study area for the Triple Site
- There is a large residential area and three schools in the expanded vapor intrusion study area, and vapor intrusion evaluation will therefore require significant public outreach
- U.S. EPA Region IX has adequate staffing to manage the Triple Site and has in-house public participation staff that would be able to provide necessary public outreach
- Philips has not yet submitted an acceptable vapor intrusion work plan for the expanded study area, and delays in further evaluation of vapor intrusion in this area may endanger human health

Four days later EPA issues a Notice of Deficiency to the Responsible Parties. It ordered the preparation and implementation of a more robust Vapor Intrusion Work Plan, and it stated that the vapor intrusion evaluation would lead to a ROD amendment. It added:

> EPA will take the lead in developing and implementing an appropriate community outreach strategy for the vapor intrusion investigation, however, your full participation in developing outreach tools (such as press releases, fact sheets, etc.) and conducting outreach (door-to-door efforts, individual meetings with property owners and occupants, public meetings, etc.) is encouraged.

The Public Learns

My colleagues and I had been working for some time with Bay Area news organization to raise awareness of the potential for vapor intrusion at many of Silicon Valley's groundwater plumes, so when I learned what was happening in Sunnyvale I went to the press. The day after EPA issued the Notice of Deficiency NBC Bay Area visited the San Miguel neighborhood. The reporter found that many people, school parents and residents, were unaware of the contamination underlying their homes and schools. For the news video, see http://www.nbcbayarea.com/news/local/Sunnyvale-Schools-Homes-Sit-on-Toxic-Groundwater-270995341.html.

The news coverage immediately caught the attention of public, including long-term residents, who remembered the issue from a quarter century ago, as well as newcomers. It immediately triggered a discussion on Nextdoor, a neighborhood social networking site. While one person expressed alarm, another wrote, "Knowing that the EPA is now involved hopefully means they'll take steps to solve this issue." Indeed the NBC news story was about EPA taking action, not that the media had discovered a problem that officials were hiding. And it repeated the critical assurance that local drinking water supplies were not affected—since that water

comes from Yosemite via the Hetch-Hetchy Aqueduct, which crosses Sunnyvale and Mountain View on the way to San Francisco.

NBC quoted me warning about the risk to pregnant women, and the next day I got a call from a pregnant teacher at the San Miguel School. I explained that even if unacceptable levels were found at the school, that only meant that she was at increased risk. That is, exposure did not mean that her child would necessarily be born with cardiac birth defects. EPA's project manager talked to her soon thereafter.

In response to the news coverage, and at the request of the Sunnyvale School District, EPA prepared a fact sheet in English and Spanish. (Later fact sheets were also circulated in Chinese. Within a week, it was distributed to students at San Miguel Elementary School, the King's Academy, Rainbow Montessori School, and the adjacent daycare center. The fact sheet explained why more sampling was necessary:

> This past year EPA strengthened its protective levels for TCE, due to new information about potential cancer risks related to TCE exposure. New levels that would warrant an accelerated EPA response were also developed for short-term risks, including liver and kidney effects and organ problems in babies whose mothers were exposed during the first trimester of pregnancy.

The fact sheet also explained that more sampling events were required because new research showed that vapor intrusion can vary throughout the year.

EPA followed up the fact sheets with meetings with schoolparents and a series of public meetings. I attend the first public meeting, held at San Miguel School, in December 2014. EPA brought a full team, including not only the project manager but the regional Superfund Director, a toxicologist, and a Spanish-language translator. EPA explained the sampling program and asked permission to place sampling devices inside homes above the plume for a period ranging from one day to two weeks.

Sampling Results

People at the meeting expressed concern, but no one panicked or reacted angrily. School officials and neighborhood leaders tell the same story. Perhaps one family pulled its child out of the Montessori school because of the contamination reports. Sampling results thus far show that TCE exceeds EPA standards at several locations, but the community seems satisfied that EPA is taking the proper response actions.

EPA reports that it found unacceptable levels of TCE in five school buildings:

> Sampling at the school buildings affected by vapor intrusion has showed low levels of TCE, with higher levels measured in crawlspaces underneath buildings and when ventilation systems were off. While a number of indoor air/classroom samples from these buildings initially exceeded EPA's action levels, EPA worked with the Responsible Parties and the school administration to put in place a temporary solution (ventilation upgrades) that are working to keep vapor intrusion levels acceptable while permanent

> systems are being designed. The effectiveness of the ventilation measures are being verified by monthly indoor air testing in all of the school buildings. The highest samples measured were collected from an auditorium in one of the school buildings, which was discovered to have a malfunctioning ventilation system. In this auditorium, samples showed TCE levels of up to 16 micrograms per cubic meter (Āg/m^3), compared to lower levels of up to 2.9 Āg/m^3 measured in 2004 and 2005. EPA brought down the levels immediately by fixing the ventilation system and opening outdoor air intakes that were closed, and noted that health risks were likely minimal because the auditorium is used infrequently, and for short periods.

As of October 2015, EPA has sampled 101 homes, finding unacceptable TCE levels in one single-family home and two duplexes (four homes). It is seeking permission to sample the rest of the 414 homes above the plume, and it "is engaging with property owners that have refused to allow testing despite tenants eager for sampling."

San Miguel neighborhood

There has been no public outcry, no exodus of students, no panic in the neighborhood. While most of the sampling data has been re-assuring, I believe that the community is responding without alarm because people trust EPA. And they trust EPA because the agency initiated the expanded investigation before hearing from the public, and it has shared its plans and findings with the community, at meetings, door-to-door, and via the Internet.

Triple Site – City of Sunnyvale Project Update
Residential/School Indoor Air Sampling & Mitigation
Sunnyvale City Hall, West Conference Room
Thursday, November 12, 2015 | 4:30 – 5:30 p.m.

Meeting Attendees:

- Melanie Morash, EPA
- Alejandro Diaz, EPA
- Lynne Kilpatrick, City of Sunnyvale
- Jennifer Garnett, City of Sunnyvale
- John Stufflebean, City of Sunnyvale
- Cynthia Woo, CB&I
- Lawrence McGuire, Circlepoint
- Trudi Ryan, City of Sunnyvale
- Dana Koefoed, Circlepoint

I. Presentation by Melanie Morash

- Meeting goals:
  - Update City Officials about outreach efforts for the residential and school testing over the last year
  - Testing results
  - Look ahead to 2016
  - Opportunity to ask questions
  - Ensure that we are on the same page and check-in to see if there is more EPA can do to support the City of Sunnyvale on this issue
- How has the reception been with the parents?
  - In general, it has been positive and smooth.
  - One family decided to pull their child from the Rainbow Montessori School because of vapor intrusion.
  - Other than this one example, the process has been going very well. EPA has been proactive in sharing up-to-date information (in multiple languages) with parents and community members through letters, updates, and meetings at San Miguel Elementary.
- The results have also been good as well?
  - The majority of sampling results confirm that TCE concentrations inside buildings are below 2.0 ug/cubic meter, *i.e.*, concentrations that do not warrant mitigation measures.
  - As we sample more buildings, EPA has found some instances where TCE concentrations in the crawlspaces under homes warrant mitigation measures to ensure that unacceptable TCE concentrations do not reach living spaces.

- Results from the schools
    - EPA has sampled four schools in the neighborhood (San Miguel, Rainbow Montessori, Children's Creative Learning Center ("CCLC") Daycare, and The King's Academy).
    - At CCLC Daycare, no TCE was detected.
    - At Rainbow Montessori, some potential for vapor intrusion has been observed in non-ventilated conditions. The school is implementing an interim plan to protect students and teachers while permanent mitigation systems are being designed.
        - What is EPA doing in the interim? We have worked with the school administration's ventilation contractor, EPA's ventilation contractor, and Locus Technologies, a private consulting firm. We evaluated the ventilation systems in all of the school buildings and made a number of upgrades. We provided letters to the school for distribution to parents. After making improvements, some teachers were intentionally turning off the ventilation, which was circumventing our efforts. We prepared letters for the teachers to provide information about the ventilation system upgrades, and implemented additional controls on the ventilation systems to ensure adequate fresh air circulation through the buildings.
        - Monthly air samples indicate the ventilation systems in affected buildings are now maintaining adequate fresh air circulation. Indoor air samples are showing either no TCE or amounts that are too small to pose a health risk. Air testing was completed before and after school. While we conduct monthly air testing at Rainbow, a mitigation plan for each affected building is being prepared. As of this meeting date, EPA has not seen those plans.
    - Air samples at Kings Academy and San Miguel all fully met EPA requirements. A couple of classrooms and in particular the small portable classrooms showed slightly higher TCE levels than we would see outside. There is some vapor intrusion but not enough to pose a health risk. Another round of tests is being performed this coming winter and another round of letter updates will be sent. We have already sent initial information letters to all parents and school faculty at both schools.
        - Should other construction methods for new portables be required?
        - As a precaution, EPA recommends that any new building constructed over this plume has a pre-emptive vapor mitigation system or a vapor barrier. New systems are much easier and less costly to build than retrofitting existing ones.
        - As a precaution EPA recommends installing a mitigation system at the California Young World portable building at San Miguel Elementary. This building is used as an after-care center. EPA has found vapor intrusion in this part of the neighborhood. Of the 115 residences sampled in the area, 18 have shown potential effects of vapor intrusion. Several buildings located near the portable building have evidence of vapor intrusion above our action levels. We recommend mitigating the portable due to the close

proximity, even though concentrations in the portable building do not exceed EPA action levels.

- Results from the homes
    - We continue to work with property owners to obtain permission to conduct testing. We have completed four door-to-door outreach events and distributed several flyers in multiple languages.
    - There are 6 residences where vapor intrusion levels inside the home are acceptable, but high levels have been found underneath the building. This indicates a risk that higher concentrations may be found inside the living spaces of these residences in the future. EPA wants to be proactive and will take action where there is a reasonable probability of material risk.
    - Mitigation plans submitted in early November were reviewed by EPA and modifications have been requested. As of November 12, EPA has communicated this information and revised plans will be submitted to EPA. EPA is hopeful that the revised plans will be acceptable and/or need only minimum corrections.
    - Buildings with a crawlspace are more straightforward to mitigate because residents do not have to be relocated. A minimal type of mitigation system would include high-density polyethylene liner in the crawlspace where the utilities and piping underneath is sealed. This is a passive type of system where vapor is vented out, above the roof and diluted in the air. EPA prefers to see an active system with fans that depressurize the crawl space. EPA will likely accept a passive system that has an active element. EPA's preference would be to see samples from under the building with no TCE or similar concentration as outside air. EPA's acceptable risk range for TCE is 0.48 to 2.0 micrograms per cubic meter.
    - The highest TCE level that we have seen outdoor is 0.62 micrograms per cubic meter. In these cases we want to conduct additional sampling after the mitigation system is installed and then return to sample annually for a reasonable length of time before shutting off the system.
    - As currently planned, residents do not need to be relocated. However, crawlspace systems require someone to go underneath to install them. A resident/tenant survey should be conducted before work begins to recognize their needs. If the resident/tenant has a different schedule, such as a graveyard shift, they may have to be relocated. This is a very diverse neighborhood and poses a challenge as every building and home is different and you need to be sensitive to their needs.
    - One building on San Juan has seen slightly elevated levels. We have re-sampled this building and the levels have gone down. If EPA decides to do proactive vapor intrusion mitigation, the residents will need to relocate as the building is slab-on-grade. It would be challenging to live there while the work is being performed.
    - EPA will know if a system needs to be installed at this building in a few months. The challenge is to time sampling according to the weather. We want to get in at the coldest possible times. The colder it is the more likely people are heating their homes which creates a "stack effect", *i.e.*, where the building sucks in air from the

subsurface. If there is a vapor intrusion problem, it's worse in the winter months. EPA's goal is to sample about 100 homes in the next month or two.

- Property owners
    - Some are responsible and caring and they work cooperatively with us. There are other property owners that are not like that.
    - EPA has begun to embark down a path of engaging with some property owners that are not cooperating.
        - One category is the owner occupied home where the owner declines the testing.
        - The second category is where the tenants have requested testing and the owners are not cooperating (*i.e.*, actively refused or not responsive).
        - EPA recently sent letters to 3 to these owners. Two have multiple buildings. Some owners have refused access for testing and others have threatened eviction to tenants. The letters show the EPA authority to test these residences and the health risks associated with taking no action. The letter requires that property owners respond to EPA within five days, and then the EPA will submit an order. If they do not provide voluntarily access, the EPA will impose a fine of up to $35,000/day. We don't know the next step, beyond that as this action is setting a precedent. However, the EPA does not like to threaten anyone. We will have to see what happens and follow this process out. Our goal is to education property owners and hopefully their cooperation is voluntary.
        - People also have concerns about the drinking water which is not affected by this contamination. However, EPA has on numerous occasions advised people that their drinking water comes from the Hetch Hetchy Reservoir and is not impacted by any potential contaminants in the groundwater.
        - There is no precedence for this action?
        - No. For this reason, EPA wants to exhaust every effort to obtain access voluntarily. The EPA has authority under the CERCLA Section 104 (e) Administrative Order with penalty provisions. Whether we will do that or hand it over to the Department of Justice remains to be seen. We are proceeding with this level of action one-step at a time.
        - What are the barriers to property owners?
        - Different scenarios of what I have heard from property owners.
            - One told me that all he cares about is marketability. If the TCE levels are high, than the tenants will want to move out of the residence.
            - Others are concerned about potential liability and that they may be sued. The EPA explained that "responsible parties" have been identified (due to past commercial manufacturing activities nearby). Current property owners are considered to be "innocent landowners" so EPA would never go after them. Their

responsibility is to allow access for testing and remediation. They are not the responsible parties.

Another category involves 15 property owners where the tenants signed up for testing. In these cases, the property owners have not responded to EPA correspondence. For these nonresponsive property owners, EPA's Civil Investigators are trying to contact them and ensure that they received our letters. After this approach, we will follow-up with a letter sent via FedEx to these unresponsive owners.

- We continue to offer testing to the whole neighborhood. The last major mailing went to over 1,000 property owners and households in September.

- Do the tenants have grounds in Civil Law to sue the property owners who is not responsive to the EPA?
- Good question that I don't know the answer to it.

- Looking ahead
  - There is the issue of new development and permitting. EPA has been focused on sampling air with the cooperation of the responsible parties. Looking ahead, 2016 will be another big year for conducting indoor air sampling and door-to-door surveying. As we look ahead, we will need to work closely with the City regarding the implementation of any mitigation strategies for new development or renovations. EPA would want to work with the City on a set of procedures that address potential vapor intrusion.
  - The question of future permitting is a good one with regard to what EPA tracks about a particular property.
  - Given the information we now have about a given property, when the schools or a property owner in the area requests a permit, this information will be available.
  - EPA will want the City to require mitigation systems on new construction in these areas.
  - What is required for the transfer of sale?
  - We need to look into what we can do for these types of situations.
  - The Record of Decision we have addresses vapor intrusion but not ground water. Responsible parties are containing the plume and submitting a new plan to speed up ground water cleanup. On the Lowes property, they still have elevated TCE concentrations in the deeper ground water. Probably in 2017, EPA will be looking to amend the Record of Decision for this site and formally include a vapor intrusion remedy. It will include a focused meeting with the City to handle redevelopment issues. We will read and review it together.
  - The MEW site in Mountain View has implemented the Record of Decision, institution of controls, and the lessons learned. The City decided they did not want to adopt a zoning ordinance that governed new construction over the MEW.

- Mountain View created a city policy incorporating EPAs recommendations on new requirements over the plume. EPAs preference was that they pass a zoning ordinance. They put together a city policy for renovations and new construction over the plume.
- Every time we test, owners receive an official letter of what EPA found and the recommended next steps. This should be part of the owners' record.
- What is the program for properties that change hands? Are the responsible parties going to be responsible for a certain amount of time?
- We will need to have a conversation with the responsible parties about this question. The problem goes away when the contamination source is addressed. The goal is to work with the responsible parties to lower TCE levels. When it is an issue, they need to be responsible.
- Is this a superfund site?
- The Philips site is not currently listed as a superfund site. They are in a removal fund site but not listed on the NPL list of the worst sites. When we open up the record of decision, we will look at this correction.
- They have some ultimate responsibility for clean-up?
- At AMD and TRW, they have been working aggressively to remediate by injecting sugar to digest and clean up the TCE. This method has resulted in dramatic declines.
- The Philips method to pump and treat TCE contamination is not as effective. We see 10,000 micrograms per liter on the Lowes property.
- We need to improve the problem at the source.
- The responsibility rests with the original responsible parties. We drafted a *bonafide* responsibility letter to assuage this concern.
- There is no risk of coming into contact with contaminated water or soil. The only risk that we see is inside new buildings. As long as they build in the barriers, residents and those working in the area will be protected.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

January 2016

San Miguel Neighborhood School Community
Sunnyvale, California

Dear Parents and Community Members:

Attached to this letter is a fact sheet with information about the ongoing environmental investigation being conducted by the U.S. Environmental Protection Agency (EPA) at schools and residences in this part of Sunnyvale. Throughout 2015, EPA sampled over 120 homes and all four neighborhood schools as part of a study of the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

Please note that your drinking water is not affected by this contamination. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

As expected, the majority of locations sampled at Rainbow Montessori, San Miguel Elementary, The King's Academy and Children's Creative Learning Center (CCLC) **showed low concentrations of TCE which do not pose a health risk and fully meet EPA's requirements for protecting children's and teachers' health**. None of the CCLC samples showed any evidence of vapor intrusion. However, elevated levels were measured in the crawlspaces underneath certain other school buildings and in some classroom locations when EPA sampled under "ventilation-off" conditions.

Out of precaution, mitigation systems are being designed for all of the Rainbow Montessori buildings, and monthly indoor air sampling is being conducted to verify that various ventilation upgrades are working to maintain air quality for the students and staff. Additional sampling is planned at certain classrooms at The King's Academy and San Miguel Elementary, to evaluate whether additional mitigation systems would be appropriate to further reduce risk.

During the past year of indoor air sampling, 120 households (out of over 400 total) were sampled. Eighteen residences showed unacceptable vapor intrusion levels in the crawlspaces underneath the buildings, however, indoor air levels generally met EPA's health-protective requirements. Out of precaution, mitigation systems are being designed for these residences to prevent future unacceptable exposures.

EPA will distribute another fact sheet to the school community in late 2016 with an update on the investigation and next steps. We will also hold another community meeting to provide an update on the mitigation work and groundwater cleanup progress. Please do not hesitate to contact me at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

January 12, 2016

Re: Mitigation Plan for Your Review and Approval – Addressing TCE Vapor Intrusion to Indoor Air
Residential Building # 105, # 124, #125 - Sunnyvale, California
Philips, Advanced Micro Devices 901-902, TRW Microwave Superfund Sites ("Triple Site")

Dear

Thank you for your cooperation and participation in the U.S. Environmental Protection Agency's (EPA) vapor intrusion indoor air sampling investigations in Sunnyvale, California. EPA has tested the indoor and crawlspace air at your property referenced above. The results of the testing show evidence of trichloroethene (TCE) vapor intrusion above EPA's health-protective screening levels. Based on these findings, EPA recommends a mitigation system for your building to prevent these vapors from continuing to rise up and accumulate indoors.

Locus Technologies (Locus), a private environmental consulting firm experienced in vapor intrusion issues, has prepared a mitigation plan for your review and approval. The plan is attached to this letter. J. Wesley Hawthorne of Locus will call you soon to discuss the plan and answer any questions that you may have about the system or the installation process. Mr. Hawthorne can also be reached at (415) 799-9937 or by e-mail to hawthornej@locustec.com. If you prefer, we can also meet with you in person to discuss in greater detail. As a reminder, there is no cost to you for installing or maintaining the mitigation system.

Background on EPA Investigation: EPA has been investigating the potential for vapor intrusion—a process where vapors from groundwater contamination may migrate into the indoor air in buildings—in the Duane/San Miguel Avenue neighborhood. Please be aware that your drinking water is not affected by contaminants in groundwater. Your water for drinking, bathing, and watering gardens comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains.

As of this month, EPA has tested all four schools in your area and 126 households. Certain rooms in five school buildings and 18 households have been found to be affected by vapor intrusion. Similar to your building, EPA is overseeing the development of mitigation plans for all of the affected properties.

About the Proposed Mitigation System: The mitigation system that EPA recommends for your building uses the best, most reliable technology available today to prevent TCE vapors from continuing to enter your building. The system is called a "sub-membrane depressurization system" and would be installed in the crawlspace underneath the building. It is described in detail in the attached mitigation plan, which includes a generic system diagram.

Another visit to your property will need to be arranged for making final design decisions with you and for obtaining building-specific measurements. Installation is expected to take 1 to 3 days depending on the specific site conditions. It is expected that building occupants will be able to maintain normal activities throughout the installation process. The construction work will be somewhat noisy during the installation, however, and so we would coordinate with you on your preferred days and times.

Should you choose to accept this mitigation system, you will need to sign the attached Access Agreement (permission form). Although you previously signed an Access Agreement, it covered only the investigation/sampling work that has been done to date. Because the installation and future monitoring of the mitigation system is more extensive, a new Access Agreement covering this additional work will need to be signed by the legal owners of the property, as well as the current tenants.

Follow-up Sampling and Inspections: After the mitigation system is installed, periodic air sampling and system inspections will be performed to confirm that the system is working correctly. Locus will work with you to schedule the sampling and inspections at times that are most convenient. Details are described in the attached mitigation plan under subheadings 'Operation and Maintenance' and 'Post-Mitigation Sampling Plan.'

What Happens When the System is No Longer Needed: At the time that the mitigation system is no longer needed (refer to 'Mitigation Termination Criteria' in the attached mitigation plan), you may (1) continue to operate the system at your own expense; (2) turn the system off and leave it in place; or (3) request that it be disassembled and removed.

Health Protection Goals: EPA's goal for Superfund site-related chemicals is to keep exposures as low as reasonably possible. EPA considers the safe range of TCE concentrations for residents to be below 2.0 $\mu g/m^3$ (the short-term screening level). When an indoor air sample is collected and shows a concentration above the long-term screening level (0.48 $\mu g/m^3$) but below 2.0 $\mu g/m^3$; EPA uses this information to decide whether additional sampling or response activities are necessary, to confirm that levels continue to remain protective over time. More information about TCE can be found at this website:
http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30

Your TCE Indoor Air Results: EPA considers TCE levels below 2.0 micrograms per cubic meter or $\mu g/m^3$ to be health protective. The sampling events in 2015 show higher levels of TCE in the air inside your building (up to 4.2 $\mu g/m^3$ in the living room of Apt. 3) and underneath the building in the crawlspace (up to 20 $\mu g/m^3$ in crawlspace air near Apt. 3).

The living room and crawlspace levels measured during this and several other sampling events exceed EPA's requirements, indicating that unacceptable vapor intrusion is occurring. **Therefore, the attached mitigation plan has been prepared by Locus and approved by EPA specifically for your property to address the vapor intrusion issues.**

The following table shows a summary of the TCE sampling results for your building.

Sample Location	TCE Concentrations (micrograms per cubic meter or µg/m^3)			
	October 2015 (24-Hour Samples)	October 2015 (14-Day Samples)	November 2015 (24-Hour Samples)	November 2015 (14-Day Samples)
Indoor Air Sample (Hallway – Apt. 1)	**2.6**	**2.1**	--	--
Indoor Air Sample (Living Room – Apt. 1)	**--**	**--**	**2.5**	1.9
Indoor Air Sample (Bedroom – Apt. 1)	**--**	**--**	**2.9**	**2.1**
Indoor Air Sample (Living Room – Apt. 2)	**--**	**--**	1.5	1.7
Indoor Air Sample (Living Room – Apt. 3)	**--**	**--**	**3.6**	**4.2**
Crawlspace Air Sample (Underneath building near Apt. 3)	**19**	**20**	**13**	**9.3**
Crawlspace Air Sample (Underneath building in laundry room)	**--**	**--**	**2.7**	**2.3**
Outdoor Air Sample	0.028 – 0.62 µg/m^3 (Range of outdoor air samples in the neighborhood)			
EPA Screening Levels				
Short-term Screening Level	**2.0**			
Long-term Screening Level	0.48			

TCE Vapor Intrusion Findings: The living room and crawlspace TCE concentrations do not meet EPA's requirements and show that unacceptable vapor intrusion is occurring. Therefore, a mitigation plan has been specifically developed for your property to address the vapor intrusion issue.

Next Steps: If you agree to this mitigation work, J. Wesley Hawthorne of Locus will contact you to discuss the proposed mitigation plan. In the meantime, please do not hesitate to contact me at any time at (415) 972-3050 or by email to morash.melanie@epa.gov if you have questions.

Again, EPA and Locus would also be happy to meet with you in person to discuss further and answer any questions you may have. **As a reminder, there is no cost to you for the installation or maintenance of this this mitigation system.** Thank you again for your cooperation and participation in this air sampling investigation.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

locustec.com

HEADQUARTERS:
SILICON VALLEY
[redacted]

SAN FRANCISCO
LOS ANGELES
PHOENIX
ASHEVILLE
PITTSBURGH
BOSTON

21 December 2015

Melanie Morash
Remedial Project Manager
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, CA 94105

RE: Mitigation Plan
RES105/124/125
Offsite Operable Unit, Sunnyvale, California

Dear Ms. Morash:

Locus has prepared an implementation plan for indoor air mitigation at Residence #105/124/125. Locus will engage in discussions with the property owners regarding this plan, and implementation is contingent on their approval.

Building/Property Identification

Residence #105/124/125 is three apartment units in a single building in Sunnyvale, CA. These three units are the first floor apartments in a two-story apartment building. The apartment complex is approximately 2,000 square feet; each apartment is approximately 650 square feet. A building layout was prepared by Locus based on walkthroughs on 11 and 18 November 2015 (attached). A residential survey for Residence #105 was completed on 15 October 2015, with no revisions during the 11 November 2015 resampling event; residential surveys for Residences #124 and #125 were completed on 18 November 2015. These surveys are also attached. Residences #124 and 125 were sampled on 18 November 2015, and results are not yet available at the time of this submittal. However, crawlspace samples were taken in the crawlspace beneath Residence #125 during sampling of Residence #105; this data is included in the mitigation plan.

Description of Potential Vapor Pathways

Residence #105/124/125 has a crawlspace (approximately 20 inches in height; 3,300 cf in volume) with soil floor and passive vents, which are shown in the attached layout. In addition, there may be utility conduits between the crawlspace and the living space in some apartment units. Potential vapor intrusion pathways include the crawlspace and associated utility conduits.

Summary of All Relevant Data

Analytical results received to date for trichloroethylene (TCE) are shown in the table below; all air samples were collected during 2015 by Locus and EPA contractors. Values in bold exceed EPA screening levels. Analytical results from all parameters tested by Locus are attached.

Sample Location	TCE Concentrations (micrograms per cubic meter or µg/m^3) from 2015		
	October (24-Hr)	October (14-Day)	November (24-Hr)
Indoor Air Sample (Hallway)	**2.6**	**2.1**	**2.1-2.5**
Indoor Air Sample (Bedroom)	**–**	**–**	**2.5-2.9**
Crawlspace Air Sample (Under Apt #3)	**19**	**20**	**9.6-13**
Crawlspace Air Sample (Under Laundry Room)	**–**	**–**	**2.0-2.7**
Outdoor Air Sample	0.31 (highest sample detected in neighborhood)		
EPA Screening Levels (SL)			
Short-term SL	2.0		
Long-term SL	0.48		

Proposed Mitigation Plan

Locus recommends installing a sub-membrane depressurization system (SMDS) for this property. Additionally, Locus recommends sealing around utility conduits that create pathways between the crawlspace and living areas.

Description

Implementation will entail sealing utility pathways between the crawlspace and occupied space. The SMDS will entail laying evenly spaced perforated pipe (4 inches in diameter and not less than 10 feet in length) on the floor of the crawlspace. Perforated pipe may be all or partially entrenched and/or reduced to 3 inches in diameter if requested by the owner or if necessary in order to leave a minimum of 18 inches access clearance between the top of the perforated pipe to the bottom of untreated wood or ductwork. Trenching may increase the time frame for system installation and involve additional soil handling and storage on the property. Locus will discuss these options with the owner and will accommodate owner requirements if feasible. A 10 mil co-extruded, polyolefin, ASTM E-1745 Class A vapor barrier will then be laid over the perforated pipe. The vapor barrier will be sealed at all seams and to the exterior footing and support posts. VOCs in sealing materials will be minimized. Perforated pipe will have a single collection point connected to a suction fan located on the exterior of the residence. It is suspected that the crawlspace area

is connected beneath the apartment complex; if this is not the case, the collection point may entail an exterior connection between perforated pipe under isolated sections of the crawlspace. Locus will install and maintain the system. Reimbursement of electricity costs for fan operation is available and will be discussed with the property owner.

The suction fan will exhaust at least two feet above the roofline via an exterior vent stack alongside the exterior of the residence. A screen/mesh not smaller than ½ inch will cover the opening of the vent stack. A pressure test under the membrane will be conducted upon initial installation to ensure the SMDS is providing a negative pressure across the crawlspace.

An audible alarm will be installed in a visible location that will sound and include a visual flashing light if fan operation fails (vacuum below 0.25" WC). A posted placard near the audible alarm will include instructions and contact information for the owner/tenant to call the Locus technician in the event of an alarm. Locus will discuss additional signage and alarm options available to the owner (e.g. indoor installations). If effective remote communication systems are feasible at the site, the alarm system may communicate with Locus directly. Depending on the furnace configuration at the property, a carbon monoxide detector may be appropriate for the indoor space, and will be provided to the property owner if warranted.

The system will be installed in accordance with ASTM E2121-11, Standard Practice for Installing Radon Mitigation Systems in Existing Low-Rise Residential Buildings. Installation is expected to take 1 to 3 days depending on the specific site conditions. The residents are expected to be able to maintain normal activities throughout the installation process.

After implementation, air sampling will be conducted in order to ensure mitigation effectiveness (described in a subsequent section of this plan). The mitigation will be determined to be effective if air sample results in the crawlspace are below or within the EPA risk range (0.48-2 µg/m^3) under normal occupancy conditions and results in the occupiable space are below the EPA long-term screening level (0.48 µg/m^3). Previous sample results from the crawlspace have shown concentrations ranging from 2.0-20 µg/m^3; previous results in the living space have shown concentrations ranging from non-detect to 2.1-2.9 µg/m^3. Therefore, a concentration reduction of 90% or more in the crawlspace and 83% or more in the living space would be considered effective.

Specifications

A generic system diagram is attached. Mitigation installer will be a licensed HVAC and general contractor. The mitigation installer will therefore inspect the home and installation process for potential adverse effects. If any are identified they will be brought to Locus' attention to determine whether there exist feasible options to control for adverse effects.

Specifications for the following system components are attached:

- Model RP145 mitigation fan by RadonAway. Alternatives include Model RP260 or SF180, if necessary. Fans are expected to operate at 0.5" WC static pressure.

- Model VB10 VaporBlock membrane by Raven Engineered Films.
- Checkpoint IIa alarm by RadonAway, or similar, including audible and visual alarm and silencing capability. Alarm will sound (and light flash) when vacuum is below 0.25" WC.

A gas-tight sampling port (1/4" pipe and sampling nipple with brass ball valve) will be installed above (downstream) of the fan for as needed vapor stack sampling. A port will be installed below (upstream) of the fan where pressure and flow readings can be taken.

Weather-proof placards will be securely affixed at the alarm/fan location and at crawlspace access points and will include the following information:

- Locus contact information
- Notification that the system is to remain on (e.g. "Do Not Turn Off") and instructions to call Locus immediately in the event of an alarm or system off condition
- Instructions on how to silence alarm
- Notification of mitigation system components and purpose, e.g. "TCE Reduction System" and "Do Not Alter"

EPA will have the opportunity to review final language of placards before posting.

Implementation Schedule

- Within ten calendar days of receipt of EPA's approval of the building-specific mitigation plan, implementation of mitigation measures will begin. Mitigation measures will begin with discussions with the property owner and obtaining their approval to proceed.
- Within 90 calendar days of the property owner's approval to proceed, the mitigation plan will be implemented, contingent on availability of system components, any permits required, and scheduling with the occupants and contractors.
- Within 30 calendar days of completion of mitigation activities, a final report will be submitted to EPA including copies of as-built drawings and O&M plans, and copies of documentation provided to owners and tenants. Mitigation activities will be considered complete upon determination by sample results that the system is effective.

Justification

Sub-membrane depressurization systems are a proven technology installed throughout the country for residential mitigation of VOCs in indoor air[1]. The systems have an even longer record of effectiveness for the purposes of radon mitigation, complete with ASTM standards[1]. The mechanical system will reduce the entry of soil gases into the residence by effectively sealing pathways of vapor intrusion from the crawlspace and providing an active alternate ventilation pathway to the atmosphere. Due to the likelihood of success of this design, disruption to the residents is expected

[1] OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air, OSWER Publication 9200.2-154, EPA Office of Solid Waste and Emergency Response, June 2015; communication with vapor intrusion mitigation designers.

to be minimized and the implementation process is expected to be efficient and expedient.

Potential Alternatives (if necessary)

If the SMDS does not initially meet effectiveness criteria, the potential contributions from indoor air background sources will be evaluated first. If no background sources are identified, the system will be inspected for: good seals (including utility conduits, the membrane itself and membrane seals to penetrations and exterior footing), sufficient fan velocity, and other adjustments to improve effectiveness. If the SMDS still does not meet effectiveness criteria, alternatives will be implemented and tested. Alternatives or add-ons that may be considered include additional perforated piping and suction fan upgrades.

Operation and Maintenance of Proposed Mitigation - Framework

Following implementation, these operation and maintenance activities are expected:

- Quarterly inspections during the first year of operation and annual inspections thereafter, including checking and repairing, as necessary: rodent, trade, or other damage to membrane, seals on membrane and vent stack, fan operation (including velocity measurement in vent stack), seals on utility conduits between crawlspace and living space, electrical components. Expected length of time per inspection: three hours or less.
- If the fan's audible alarm sounds, owner/tenant will call the Locus technician for inspection and repair (contact information will be provided on a posted placard near the audible alarm). If effective remote communication systems are feasible at the site, the alarm may call Locus directly. In all cases, the technician will coordinate with the owner prior to arriving on-site.
- At the time that the vapor intrusion mitigation is no longer needed to maintain concentrations within the health-protective range (refer to Mitigation Termination Criteria), the owner may continue to operate the system at the owner's expense, may turn the system off and leave it in place, or may request that it be disassembled and removed.

Further details on the ongoing operation, maintenance, and monitoring of the mitigation system will be communicated to EPA and the property owner in an Operation & Maintenance (O&M) Plan.

Post-Mitigation Sampling Plan to Confirm Success of Mitigation

After implementation of pathway seals and the SMDS, air samples will be collected from the crawlspace and living space (see attached layout) using passive samplers. If additional crawlspace access can be procured without property damage, additional crawlspace sample locations may be evaluated. If additional pathways within the livable space are identified (e.g at furnace or other conduits) and accessible (e.g. furnace not in use), these may be sampled. Sampling of indoor, crawlspace, and outdoor air will be conducted 1 to 2 weeks following installation, a month following initial sampling, and then during the first winter and spring of operation. After that

period, annual monitoring will consist of physical inspections of the ventilation system as described above. Where concentrations do not meet effectiveness criteria, the residence and mitigation system will be surveyed to evaluate for potential chemical sources. If it is found necessary to improve the mitigation system, the post-mitigation sampling schedule will start after improvements are implemented. If sampling conditions can be arranged such that interior ventilation is minimized in the occupiable space, effectiveness criteria will be evaluated under those conditions.

Mitigation Termination Criteria

The SMDS will be operated until air sample results meet the following criteria without operation of the SMDS: results in the crawlspace are below or within the EPA risk range (0.48-2 µg/m^3) under normal occupancy conditions and results in the occupiable space are below the EPA long-term screening level (0.48 µg/m^3). EPA approval will be obtained prior to mitigation termination. The trigger to begin sampling for the evaluation of mitigation termination may be determined based on a combination of factors, such as, standpipe vapor sample results, regional soil gas screening levels, site-specific fate and transport modeling, and local groundwater concentrations.

If you have any questions regarding this correspondence, please call me at (415) 799-9937.

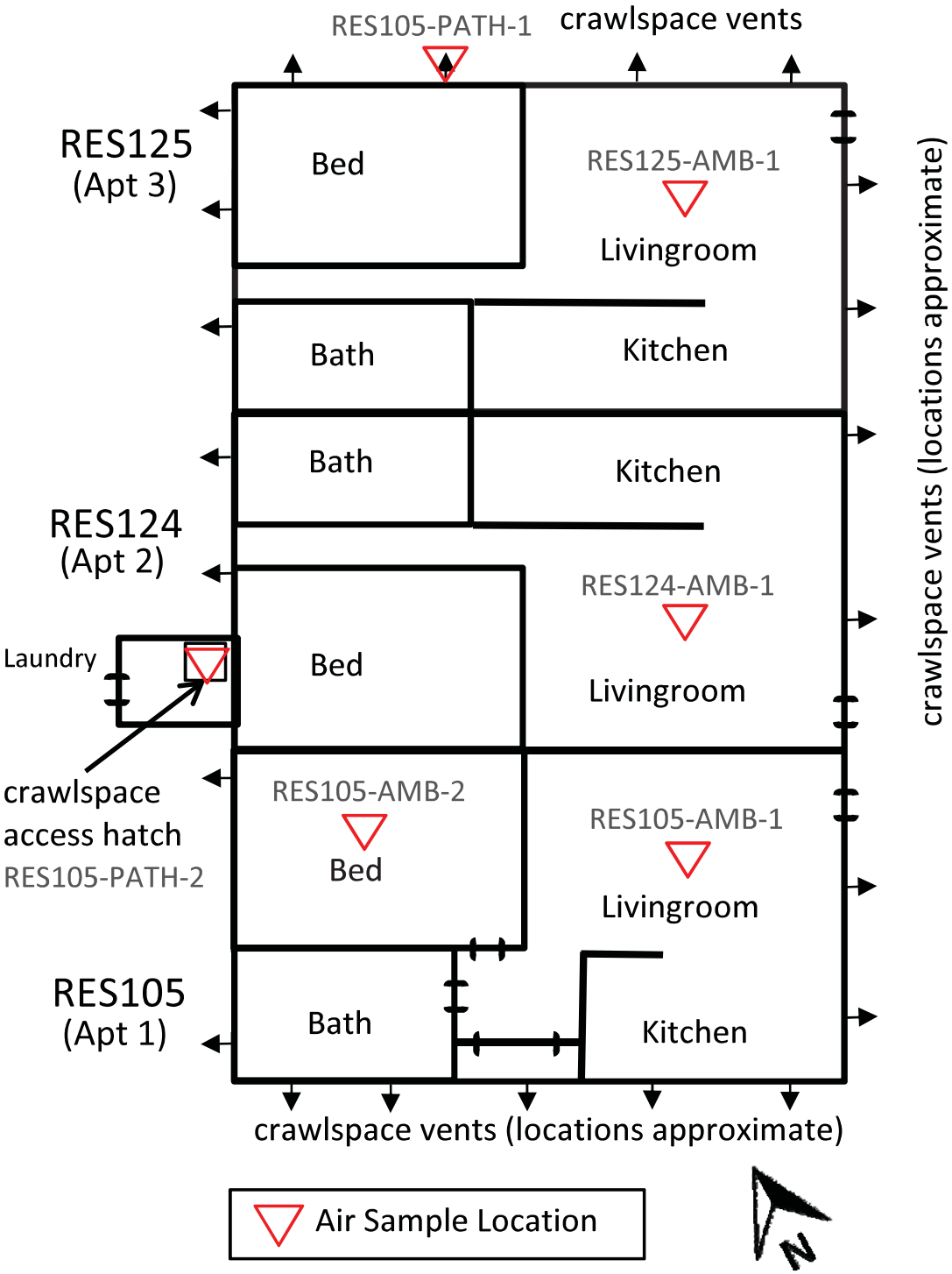
Sincerely,

J. Wesley Hawthorne, PE, PG
Senior Vice President

JWH/njl

Attachment:
RES105/124/125 Building Layout with Sample Locations
Residential Survey Forms (dated 15 October and 18 November 2015)
System Design Diagram
Specifications for Membrane, Fan, and Alarm
Raw Data Package (electronic data received to date)

cc: (electronic copies)
Shau-Luen Barker, Philips Semiconductors
Leslie Lundgren, CB&I
Todd Maiden, Reed Smith LLP
Linda Niemeyer, Northrop Grumman Systems Corporation
Heather O'Cleirigh, AMD


RES105-PATH-1
crawlspace vents
RES125
(Apt 3)
Bed
RES125-AMB-1
Livingroom
Bath
Kitchen
Bath
Kitchen
RES124
(Apt 2)
RES124-AMB-1
Laundry
Bed
Livingroom
crawlspace
access hatch
RES105-PATH-2
RES105-AMB-2
Bed
RES105-AMB-1
Livingroom
RES105
(Apt 1)
Bath
Kitchen
crawlspace vents (locations approximate)
crawlspace vents (locations approximate)
Air Sample Location
N

P.O 5:15

Residential Survey Form

Date: 10/5/15 Site: Temple site EPA Residence Location #: RES105

PART 1: General Information

Address: [redacted]

Occupant Information [redacted]

Building Type (Check appropriate boxes)

☐ Single-Family ☐ Duplex ☐ Condominium/Townhouse ☒ Apartment Building ☐ Mobile Home/ Trailer

Other ☐ _____

Building Occupancy

What times / days is building likely to receive ventilation Weekends - once a week

Are the heating / cooling systems routinely operated? ☐ Yes ☒ No

If yes, what times of the day / year? _____

Building Characteristics

Year/Decade Built: _____ Number of Stories: 2

Approximate Building Area (square feet): Total _____ First Floor _____

If there is an attached garage describe its use: NO

Foundation Type (Check appropriate boxes)

☐ Slab-on-Grade

☒ Crawl Space – Describe Crawlspace (Access Location, Height, and Vent Locations)

Cinderblock - Vents at bottom of blk. Access under unit #3

☐ Basement - Characteristics (Check appropriate boxes)

☐ Dirt Floor ☐ Sealed ☐ Wet Surfaces ☐ Sump Pump ☐ Concrete Cracks ☐ Floor Drains

Condition of the Concrete / Floor _____

PART 2: Factors Impacting Indoor Air Quality

Questions

Describe remodeling, painting, or significant cleaning activities that have occurred over the last 6 months (what was done, what area, and when):

NO

Residential Survey Form

Date: _____ **Site:** _____ **EPA Residence Location #:** RES105

Describe any open combustion in the building (Smoking/Incense/Candles/Fireplace):
NO

Describe any chemical-infused materials that are regularly brought into the building (including dry cleaned clothes/fabrics or those brought home from work (what/how often):
NO

Have site chemicals of concern been used or stored in building or adjacent garage?

☐ Yes ☒ No

Please list the chemicals_____

Have any significant amounts of volatile chemicals been used recently? ☐ Yes ☒ No

Please list the chemicals_____

Describe any instance of water/groundwater present in the basement/crawlspace (including sumps):

_____

Observations

What is the temperature relative to outside? Same

What pathways to the subsurface were observed? Vents outside building

Are windows and door kept open? NO

Is there evidence of significant negative pressure? NO

Do parts of the indoor environment appear stagnant? NO

Describe any strong odors. NO

Other Information (that may be of importance in understanding the indoor air quality in residence):

_____

_____

_____

Potential Sampling Locations

General notes on potential sample locations and type. Tentative sampling date(s) and preferred times.

Pathway sample under unit #3

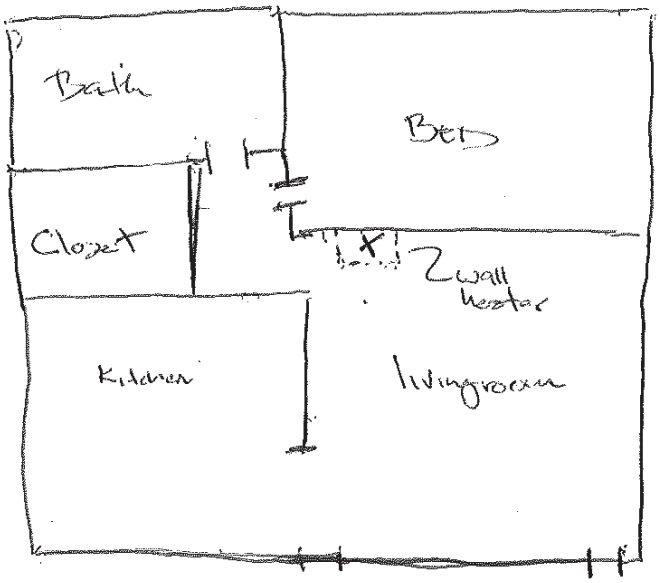
_____

_____

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

On this page, draw the general floor plan of the building and denote potential locations of sample collection. Indicate locations of doors, windows, indoor air contaminant sources and field instrument readings.



Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

PART 3: Inventory of Potential Indoor Chemical Sources:

Instructions: List items/products in the building or the attached garage that may contain site compounds of concern. These should be removed prior to sampling. List items/products that that give off significant volatiles as these may interfere with chemical analysis. Include chemicals that may be tracked into the house from an occupant. This could be chemical usage at work or in an attached workshop/garage. A portable instrument, such as a photo-ionization detector (PID) can be used to help locate volatile chemicals.

Examples of products that may contain trichloroethene (TCE) or related chemicals include gun cleaner, rubber cement, solvent degreasers, spot removers, correction fluid, and electrical motor cleaner (also be aware that older products are more likely to contain TCE).

Examples of significant volatile chemical sources include gas powered equipment, gasoline storage cans, oil-based paint, paint thinner, nail polish remover, moth balls, perfumes, scented decorative items, and insecticides.

Potential chemical source	Location of Product Source	Photograph, ingredients, PID reading?

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

PART 4: Building Ventilation Systems

Type(s) of Cooling/Heating Used (Check appropriate boxes)

☐ Central Forced Air (ducted)

- ☐ Natural Gas Furnace ☐ Electric Furnace
- ☐ Air Conditioner?
- ☐ Outdoor Air Intake?
- ☐ Floor Vents on the first floor?

Location of the Furnace _____

Which rooms have air supply _____

Location of air returns _____

☒ Centrally located wall heater(s)

Natural Gas or Electric?

Location(s) Not ducted to return

☐ Centrally located floor heater(s)

Natural Gas or Electric?

Location(s) _____

☐ Electrical Radiators

Location(s) _____

☐ Water/Steam Radiators

Location(s) _____

☐ Radiant Floor Heat

Location(s) _____

☐ Wood Stove(s)

Location(s) _____

☐ Fireplace

Location(s) _____

☐ Window / Wall Air Conditioning Units

Location(s) _____

Are the outdoor air vents opened (if equipped) _____

☐ Other (specify)_____

Are fans used?

☐ No ☒ Yes, Ceiling fans ☐ Yes, Room Fans ☒ Yes, Kitchen Exhaust ☒ Yes, Bathroom Exhaust

☐ Yes, Attic/Whole house Fans CFM _____

☐ Other (specify)_____

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES105

Additional Notes:

Residential Survey Form

P.O Friday 10am

Date: 11/18/10 Site: _____ EPA Residence Location #: Res124

PART 1: General Information

Address: [redacted]

Occupant Information [redacted]

Building Type (Check appropriate boxes)

☐ Single-Family ☐ Duplex ☐ Condominium/Townhouse ☒ Apartment Building ☐ Mobile Home/ Trailer

Other ☐ _____

Building Occupancy

What times / days is building likely to receive ventilation NO

Are the heating / cooling systems routinely operated? ☐ Yes ☐ No wall unit, not on yet

If yes, what times of the day / year? _____

Building Characteristics

Year/Decade Built: _____ Number of Stories: 2

Approximate Building Area (square feet): Total _____ First Floor 1

If there is an attached garage describe its use: NO, carport only

Foundation Type (Check appropriate boxes)

☐ Slab-on-Grade

☒ Crawl Space – Describe Crawlspace (Access Location, Height, and Vent Locations)

outside of building / laundry room

☐ Basement - Characteristics (Check appropriate boxes)

☐ Dirt Floor ☐ Sealed ☐ Wet Surfaces ☐ Sump Pump ☐ Concrete Cracks ☐ Floor Drains

Condition of the Concrete / Floor _____

PART 2: Factors Impacting Indoor Air Quality

Questions

Describe remodeling, painting, or significant cleaning activities that have occurred over the last 6 months (what was done, what area, and when):

none

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

Describe any open combustion in the building (Smoking/Incense/Candles/Fireplace):
Candles sometimes

Describe any chemical-infused materials that are regularly brought into the building (including dry cleaned clothes/fabrics or those brought home from work (what/how often):
no

Have site chemicals of concern been used or stored in building or adjacent garage?

☐ Yes ☒ No

Please list the chemicals N/A

Have any significant amounts of volatile chemicals been used recently? ☐ Yes ☒ No

Please list the chemicals N/A

Describe any instance of water/groundwater present in the basement/crawlspace (including sumps):
none

Observations

What is the temperature relative to outside? warm

What pathways to the subsurface were observed? outside, laundry room

Are windows and door kept open? NO

Is there evidence of significant negative pressure? NO

Do parts of the indoor environment appear stagnant? NO

Describe any strong odors. New carpet smell

Other Information (that may be of importance in understanding the indoor air quality in residence):

N/A

Potential Sampling Locations

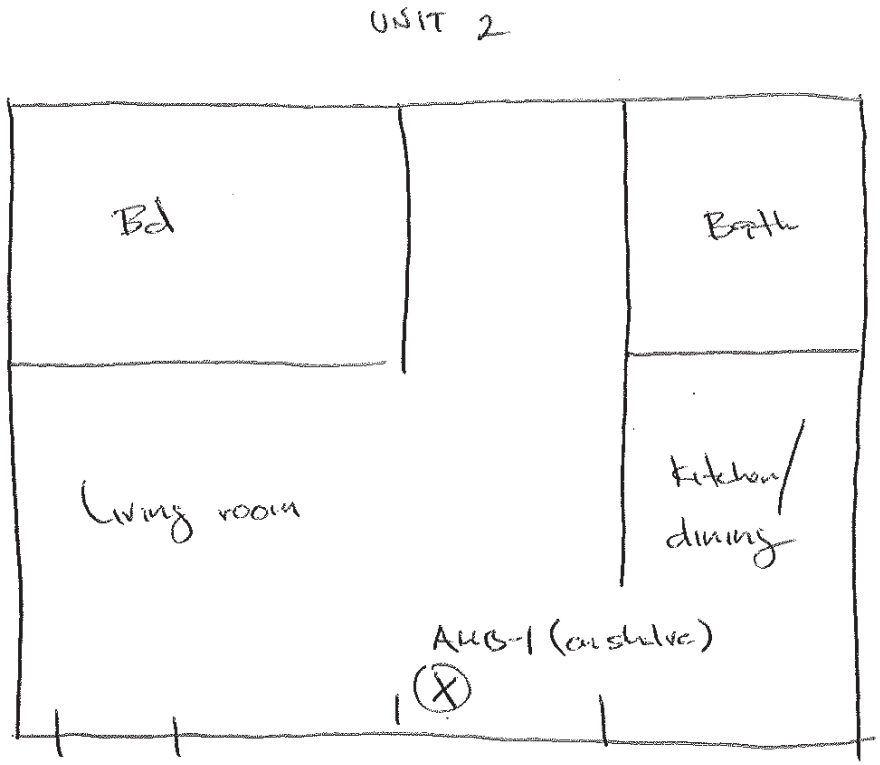
General notes on potential sample locations and type. Tentative sampling date(s) and preferred times.

Couple just moved in a few days ago.

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

On this page, draw the general floor plan of the building and denote potential locations of sample collection. Indicate locations of doors, windows, indoor air contaminant sources and field instrument readings.



Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

PART 3: Inventory of Potential Indoor Chemical Sources:

Instructions: List items/products in the building or the attached garage that may contain site compounds of concern. These should be removed prior to sampling. List items/products that that give off significant volatiles as these may interfere with chemical analysis. Include chemicals that may be tracked into the house from an occupant. This could be chemical usage at work or in an attached workshop/garage. A portable instrument, such as a photo-ionization detector (PID) can be used to help locate volatile chemicals.

Examples of products that may contain trichloroethene (TCE) or related chemicals include gun cleaner, rubber cement, solvent degreasers, spot removers, correction fluid, and electrical motor cleaner (also be aware that older products are more likely to contain TCE).

Examples of significant volatile chemical sources include gas powered equipment, gasoline storage cans, oil-based paint, paint thinner, nail polish remover, moth balls, perfumes, scented decorative items, and insecticides.

Potential chemical source	Location of Product Source	Photograph, ingredients, PID reading?
N/A		

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

PART 4: Building Ventilation Systems

Type(s) of Cooling/Heating Used (Check appropriate boxes)

☐ Central Forced Air (ducted)

- ☐ Natural Gas Furnace ☐ Electric Furnace
- ☐ Air Conditioner?
- ☐ Outdoor Air Intake?
- ☐ Floor Vents on the first floor?

Location of the Furnace _____

Which rooms have air supply _____

Location of air returns _____

☒ Centrally located wall heater(s) (not ac)
Natural Gas or Electric?

Location(s) in living room

☐ Centrally located floor heater(s)
Natural Gas or Electric?

Location(s) _____

☐ Electrical Radiators
Location(s) _____

☐ Water/Steam Radiators
Location(s) _____

☐ Radiant Floor Heat
Location(s) _____

☐ Wood Stove(s)
Location(s) _____

☐ Fireplace
Location(s) _____

☐ Window / Wall Air Conditioning Units
Location(s) _____

Are the outdoor air vents opened (if equipped) _____

☐ Other (specify)_____

Are fans used?

☒ No ☐ Yes, Ceiling fans ☐ Yes, Room Fans ☒ Yes, Kitchen Exhaust ☐ Yes, Bathroom Exhaust

☐ Yes, Attic/Whole house Fans CFM _____

☐ Other (specify)_____

Residential Survey Form

Date: _____ Site: _____ EPA Residence Location #: RES124

Additional Notes:

N/A

Residential Survey Form

Date: 11/18/15 **Site:** TS **EPA Residence Location #:** RESI25

PART 1: General Information

Address: [redacted]

Occupant Information [redacted]

Building Type (Check appropriate boxes)

☐ Single-Family ☐ Duplex ☐ Condominium/Townhouse ☒ Apartment Building ☐ Mobile Home/ Trailer

Other ☐ _____

Building Occupancy

What times / days is building likely to receive ventilation open bathroom window all the time

Are the heating / cooling systems routinely operated? ☒ Yes ☐ No NO/ A/C

If yes, what times of the day / year? winter only

Building Characteristics

Year/Decade Built: _____ Number of Stories: 2

Approximate Building Area (square feet): Total _____ First Floor 1

If there is an attached garage describe its use: carport only

Foundation Type (Check appropriate boxes)

☐ Slab-on-Grade

☒ Crawl Space – Describe Crawlspace (Access Location, Height, and Vent Locations)

side of building / laundry room

☐ Basement - Characteristics (Check appropriate boxes)

☐ Dirt Floor ☐ Sealed ☐ Wet Surfaces ☐ Sump Pump ☐ Concrete Cracks ☐ Floor Drains

Condition of the Concrete / Floor _____

PART 2: Factors Impacting Indoor Air Quality

Questions

Describe remodeling, painting, or significant cleaning activities that have occurred over the last 6 months (what was done, what area, and when):

8 mo/ ago bathroom remodeled & painted

Residential Survey Form

Date: _____ **Site:** _____ **EPA Residence Location #:** RES125

Describe any open combustion in the building (Smoking/Incense/Candles/Fireplace):
air freshener used in bathrooms

Describe any chemical-infused materials that are regularly brought into the building (including dry cleaned clothes/fabrics or those brought home from work (what/how often):
1X every 2 weeks

Have site chemicals of concern been used or stored in building or adjacent garage?

☐ Yes ☒ No

Please list the chemicals N/A

Have any significant amounts of volatile chemicals been used recently? ☐ Yes ☒ No

Please list the chemicals N/A

Describe any instance of water/groundwater present in the basement/crawlspace (including sumps):

None

Observations

What is the temperature relative to outside? Warm

What pathways to the subsurface were observed? laundry room/building vents

Are windows and door kept open? Yes

Is there evidence of significant negative pressure? No

Do parts of the indoor environment appear stagnant? No

Describe any strong odors. No

Other Information (that may be of importance in understanding the indoor air quality in residence):

N/A

Potential Sampling Locations

General notes on potential sample locations and type. Tentative sampling date(s) and preferred times.

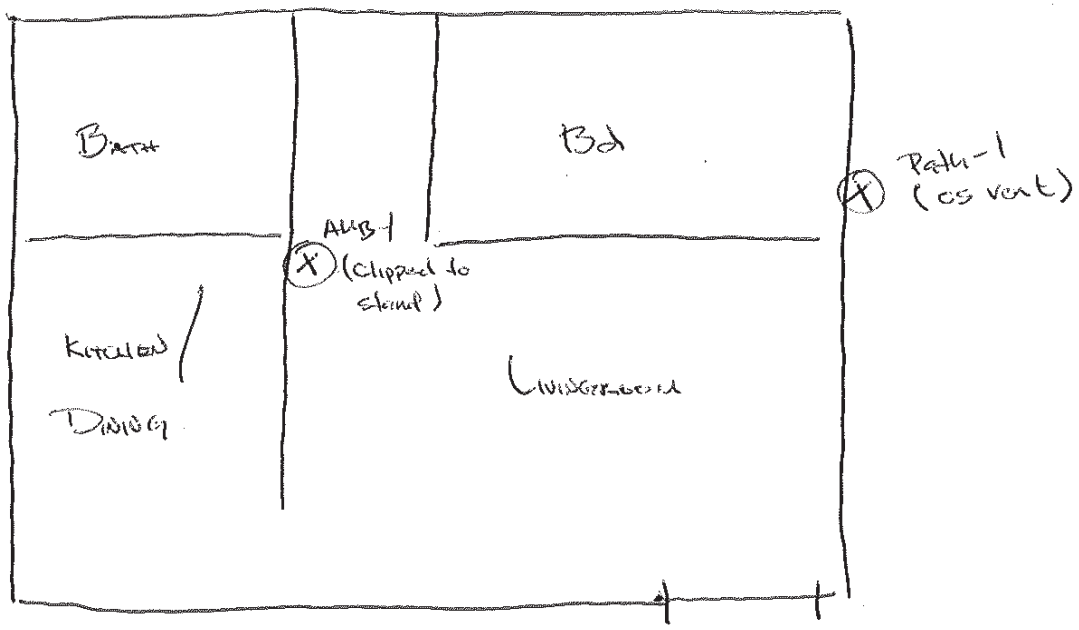
N/A

Residential Survey Form

Date: _____ **Site:** _____ **EPA Residence Location #:** RES125

On this page, draw the general floor plan of the building and denote potential locations of sample collection. Indicate locations of doors, windows, indoor air contaminant sources and field instrument readings.

UNIT 3



Residential Survey Form

Date: _____ **Site:** _____ **EPA Residence Location #:** RES125

PART 3: Inventory of Potential Indoor Chemical Sources:

Instructions: List items/products in the building or the attached garage that may contain site compounds of concern. These should be removed prior to sampling. List items/products that that give off significant volatiles as these may interfere with chemical analysis. Include chemicals that may be tracked into the house from an occupant. This could be chemical usage at work or in an attached workshop/garage. A portable instrument, such as a photo-ionization detector (PID) can be used to help locate volatile chemicals.

Examples of products that may contain trichloroethene (TCE) or related chemicals include gun cleaner, rubber cement, solvent degreasers, spot removers, correction fluid, and electrical motor cleaner (also be aware that older products are more likely to contain TCE).

Examples of significant volatile chemical sources include gas powered equipment, gasoline storage cans, oil-based paint, paint thinner, nail polish remover, moth balls, perfumes, scented decorative items, and insecticides.

Potential chemical source	Location of Product Source	Photograph, ingredients, PID reading?
N/A		

Residential Survey Form

Date: _____ **Site:** _____ **EPA Residence Location #:** RES125

PART 4: Building Ventilation Systems

Type(s) of Cooling/Heating Used (Check appropriate boxes)

☐ Central Forced Air (ducted)

- ☐ Natural Gas Furnace ☐ Electric Furnace
- ☐ Air Conditioner?
- ☐ Outdoor Air Intake?
- ☐ Floor Vents on the first floor?

Location of the Furnace _____

Which rooms have air supply _____

Location of air returns _____

☒ Centrally located wall heater(s) — not on yet, but will use in winter/colder days

Natural Gas or Electric?

Location(s) living room

☐ Centrally located floor heater(s)

Natural Gas or Electric?

Location(s) _____

☐ Electrical Radiators

Location(s) _____

☐ Water/Steam Radiators

Location(s) _____

☐ Radiant Floor Heat

Location(s) _____

☐ Wood Stove(s)

Location(s) _____

☐ Fireplace

Location(s) _____

☐ Window / Wall Air Conditioning Units

Location(s) _____

Are the outdoor air vents opened (if equipped) _____

☐ Other (specify)_____

Are fans used?

☐ No ☐ Yes, Ceiling fans ☒ Yes, Room Fans ☒ Yes, Kitchen Exhaust ☐ Yes, Bathroom Exhaust

☐ Yes, Attic/Whole house Fans CFM _____

☐ Other (specify)_____

Residential Survey Form

Date: _____ **Site:** _____ **EPA Residence Location #:** RES125

Additional Notes:

n/a

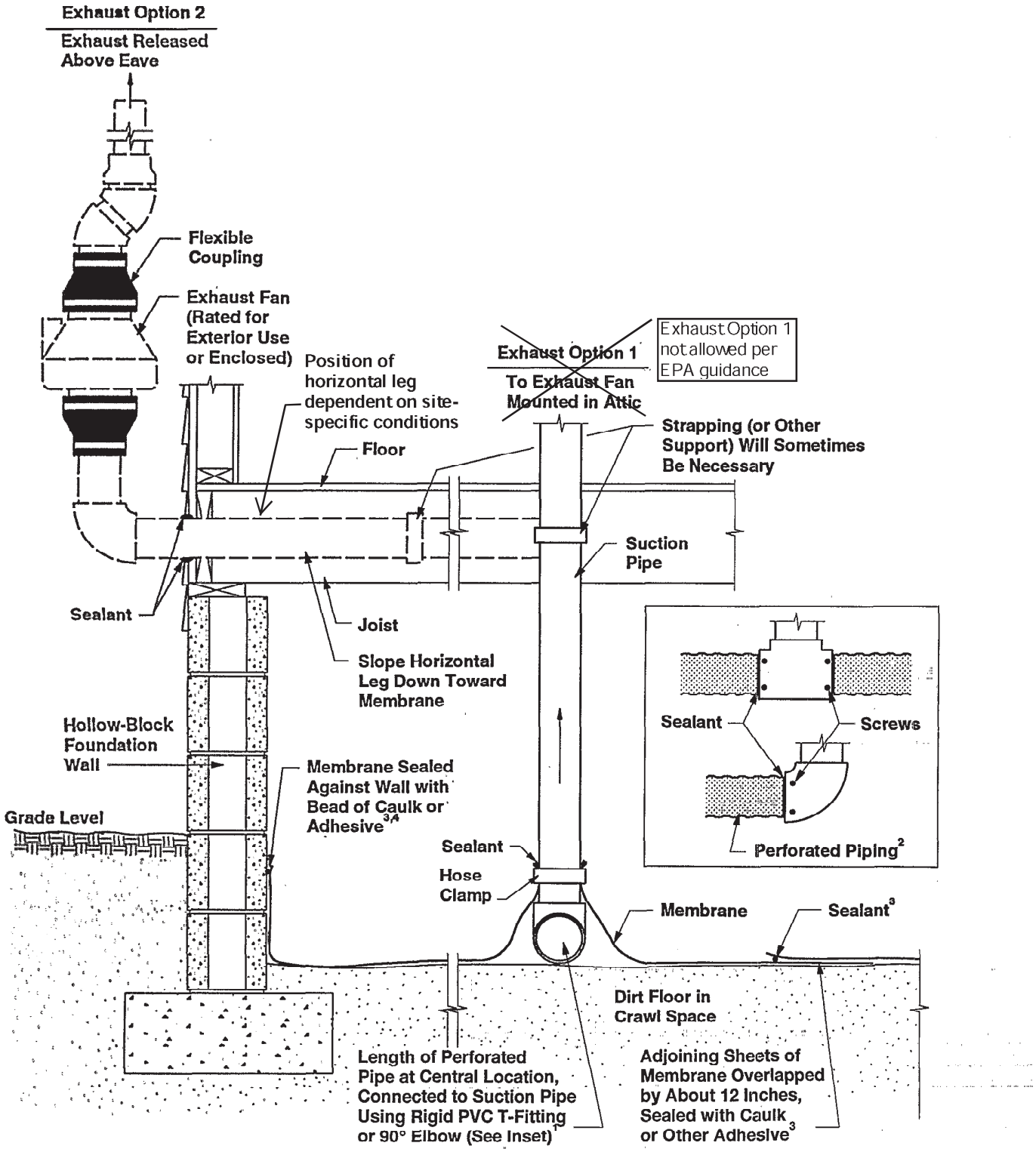


Figure 7. Sub-membrane depressurization (SMD) for the case where suction is drawn on perforated piping beneath the membrane (DTD analogue).

ADAPTED FROM Henschel, D. Bruce. October 1993. Radon Reduction Techniques for Existing Detached Houses: Technical Guidance (Third Edition) for Active Soil Depressurization Systems, EPA Office of Research and Development, EPA/626/R-93/011.

VAPORBLOCK® VB6 & VB10

High Performance Underslab Vapor Barrier

RAVEN ENGINEERED FILMS

Product Description

VaporBlock® is a high performance, underslab vapor barrier designed to retard moisture migration through concrete slabs and concrete walls to protect your structure from:

- MOLD: VaporBlock® reduces moisture condensation within a structure, impeding the growth of molds, mildews, and fungi.
- MOISTURE: VaporBlock® protects flooring materials by maintaining moisture levels well below the requirements of ASTM E-1745-11.
- RADON: VaporBlock® is used as a component of radon mitigation systems to protect indoor air quality and occupant health.

VaporBlock® is one of the most effective underslab vapor barriers on the market today! Benefits include:

- Low moisture vapor permeability
- Superior puncture resistance
- High tensile tear strength
- Resistance to decay and degradation

VaporBlock® is manufactured to strict conformance specifications under our ISO 9001-2008 Certified Management System to consistently exceed ASTM standards and project expectations. Raven's accredited lab ensures VaporBlock® meets the highest possible quality standards across multiple industries. VaporBlock® is supported with independent testing. Results are available upon request, as required under ASTM E-1745-11. VaporBlock® is readily available through nation-wide distribution:

- Available in 6, 10 and 15 mil for optimal project flexibility (VB15 on seperate data sheet)
- Larger roll sizes equal lower installation costs

Raven Industries manufactures VaporBlock® and controls all aspects from start to finish assuring the final product meets our high performance standards. Raven is a publicly-traded company, with over 50 years of stability and service excellence to stand behind our products with a future of innovation and growth.

VaporBlock® UNDERSLAB VAPOR RETARDER

Vapor Barrier - Commercial

Product	Part #
VAPORBLOCK 6	VB6
VAPORBLOCK 10	VB10

APPLICATIONS

- Underslab Vapor Retarder/Barrier
- Foundation Wall Vapor Retarder
- Radon Retarder

Note: All instructions on architectural or structural drawings should be reviewed and followed. Detailed installation instructions accompany each roll of VaporBlock and can also be located on our website.

ASTM E-1643 also provides general installation information for vapor retarders. All VaporBlock series materials can be installed with print or color facing up or down and will provide the same performance.

ASTM E-1745-11, "Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs".

VAPORBLOCK® VB6 & VB10

High Performance Underslab Vapor Barrier

PROPERTIES	TEST METHOD	VAPORBLOCK VB6 Imperial	VAPORBLOCK VB10 Imperial	ASTM E 1745-11 Class A, B & C[1] Imperial
Appearance		Blue	Blue	-
Thickness, Nominal		6 mil	10 mil	-
Roll Size		15 ft x 200 ft	15 ft x 200 ft	-
Weight		29 lbs/MSF	49 lbs/MSF	-
Classification	ASTM E1745-11	CLASS C	CLASS A, B & C	Class A, B, or C
Tensile Strength Average MD & TD (New Material) (After Exposure)	ASTM E154 Section 9, (D882)	32 lbs/in 25 lbs/in	52 lbs/in 53 lbs/in	Class A = 45 lbs/in Class B = 30 lbs/in Class C = 13.6 lbs/in Minimum
Puncture Resistance	ASTM D1709 Method B	>1500 g	>2600 g	Class A = 2200 g Class B = 1700 g Class C = 475 g Minimum
Permeance (New Material) (After Conditioning)	ASTM E154 Section 7 ASTM E96 Procedure B ASTM E154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.090 *Perms 0.105 0.124 0.097 0.099	0.0146 *Perms 0.0153 0.0151 0.0160 0.0181	Class A, B, & C 0.1 *Perms Maximum
WVTR	ASTM E96 Procedure B	0.080 grain/hr-ft^2	0.0084 grain/hr-ft^2	-
Maximum Use Temperature		180° F	180° F	-
Minimum Use Temperature		-70° F	-70° F	-

* grains/(ft^2·hr·in Hg) [1] Referencing ASTM E1745-11, Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs

VaporBlock® UNDERSLAB VAPOR BARRIER

VaporBlock® can be identified as blue in color printed with the VaporBlock® logo and the conformance information listing ASTM E-1745, classifications.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.RavenEFD.com

RAVEN INDUSTRIES

Engineered Films Division
P.O. Box 5107
Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333

Toll Free: **800-635-3456**
Email: **efdsales@ravenind.com**
www.ravenefd.com
3/14 EFD 1485

Scan QR Code to download current technical data sheets via the Raven website.

RadonAway®
The world's leading radon fan manufacturer

RP Series

Radon Mitigation Fan

All RadonAway® fans are specifically designed for radon mitigation. RP Series Fans provide superb performance, run ultra-quiet and are attractive. They are ideal for most sub-slab radon mitigation systems.

Features

- Energy efficient
- Ultra-quiet operation
- Meets all electrical code requirements
- Water-hardened motorized impeller
- Seams sealed to inhibit radon leakage
  (RP140 & RP145 double snap sealed)
- ETL Listed - for indoor or outdoor use
- Thermally protected motor
- Rated for commercial and residential use

MODEL	P/N	FAN DUCT DIAMETER	WATTS	MAX. PRESSURE"WC	TYPICAL CFM vs. STATIC PRESSURE WC				
					0"	.5"	1.0"	1.5"	2.0"
RP140	23029-1	4"	15-21	0.8	135	70	-	-	-
RP145	23030-1	4"	41-72	2.1	166	126	82	41	3
RP260	23032-1	6"	50-75	1.6	272	176	89	13	-
RP265	23033-1	6"	91-129	2.3	334	247	176	116	52
RP380	28208	8"	95-152	2.3	497	353	220	130	38

Made in USA with US and imported parts

ETL Listed

All RadonAway inline radon fans are covered by our 5-year, hassle-free warranty

Model	A	B	C
RP140	4.5"	9.7"	8.5"
RP145	4.5"	9.7"	8.5"
RP260	6"	11.75"	8.6"
RP265	6"	11.75"	8.6"
RP380	8"	13.41"	10.53"

For Further Information Contact

8/15
P/N 02008

RadonAway™
The world's leading radon fan manufacturer

SF180

Radon Mitigation Fan

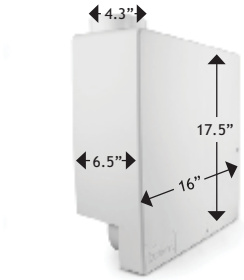
All RadonAway™ fans are specifically designed for radon mitigation. The SF180 fan provides superb performance, runs ultra-quietly and is a low-profile, attractive alternative to a traditional round radon fan.

Features

- Stay-white (non-yellowing) exterior
- Built-in moisture/condensate management
- Seams sealed under negative pressure
  (to inhibit radon leakage)
- Interchangeable with other fan models
- Mountable on 3″ or 4″ pipes
- Inlet/Outlet: 4.3″ OD
  (4″ PVC Sched 40 size compatible)
- Designed to conceal electrical disconnect
- Quiet operation
  (Mounting method limits vibration transfer)

MODEL	FAN DUCT DIAMETER	WATTS	MAX.PRESSURE "WC	TYPICAL CFM vs. STATIC PRESSURE WC				
				0"	.5"	1.0"	1.5"	2.0"
SF180	3" or 4"*	53-71	2.1	149	127	96	61	-

*Exterior Switch Kit and PVC offset coupling sold separately, call for details.



Made in USA with US and imported parts

ETL Listed

All RadonAway inline radon fans are covered by our 5-year, hassle-free warranty

For Further Information Contact

9/13
P/N 02022

INSTALLATION & OPERATING INSTRUCTIONS
Instruction P/N IN015 Rev E
FOR *CHECKPOINT IIa* TM P/N 28001-2 & 28001-3
RADON SYSTEM ALARM

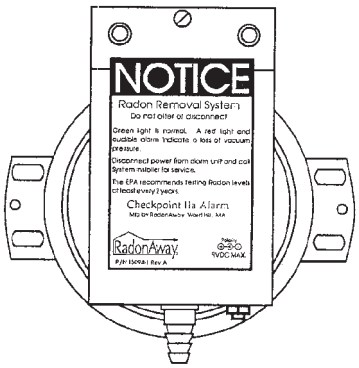
INSTALLATION INSTRUCTIONS
(WALL MOUNTING)

Select a suitable wall location near a vertical section of the suction pipe. The unit should be mounted about four or five feet above the floor and as close to the suction pipe as possible. Keep in mind that with the plug-in transformer provided, the unit must also be within six feet of a 120V receptacle. **NOTE: The Checkpoint IIa is calibrated for vertical mounting, horizontal mounting will affect switchpoint calibration.**

Drill two ¼" holes 4" apart horizontally where the unit is to be mounted.

Install the two ¼" wall anchors provided.

Hang the CHECKPOINT IIa from the two mouting holes located on the mounting bracket. Tighten the mounting screws so the unit fits snugly and securely against the wall.



Drill a 5/16" hole into the side of the vent pipe about 6" higher than the top of the unit.

Insert the vinyl tubing provided about 1" inside the suction pipe.

Cut a suitable length of vinyl tubing and attach it to the pressure switch connector on the CHECKPOINT IIa.

CALIBRATION AND OPERATION.

The CHECKPOINT IIa units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:
28001-2 -.25" WC Vacuum
28001-3 -.10" WC Vacuum

To Verify Operation:

With the exhaust fan off or the pressure tubing disconnected and the CHECKPOINT IIa plugged in, both the red indicator light and the audible alarm should be on.

Turn the fan system on or connect the pressure tubing to the fan piping. The red light and the audible alarm should go off. The green light should come on.

Now turn the fan off. The red light and audible alarm should come on in about two or three seconds and the green light should go out.

WARRANTY INFORMATION

Subject to applicable consumer protection legislation, RadonAway warrants that the CHECKPOINT IIa will be free from defective material and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway. All other warranties, expressed or written, are not valid. To make a claim under these limited warranties, you must return the defective item to RadonAway with a copy of the purchase receipt. RadonAway is not responsible for installation or removal cost associated with this warranty. In no case is RadonAway liable beyond the repair or replacement of the defective product FOB RadonAway.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO WARRANTY OF MERCHANTIBILITY. ALL OTHER WARRANTIES, EXPRESSED OR WRITTEN, ARE NOT VALID.

For service under these warranties, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. **No returns can be accepted without an RMA.** If factory return is required, the customer assumes all shipping costs to and from factory.

Manufactured by:
RadonAway
Ward Hill, MA
(978)-521-3703

RES105 RAW DATA PACKAGE

Parameter Name Report Units			1,1,1-Trichloroethane (TCA) ug/m3	1,1,2-Trichlorotrifluoroethane (CFC 113) ug/m3	1,1-Dichloroethane (1,1-DCA) ug/m3	1,1-Dichloroethene (1,1-DCE) ug/m3
Location ID	Date Sampled	Sample Purpose	Report Result	Report Result	Report Result	Report Result
BLANK-RES106	10/15/2015	FB	ND 0.18	ND 0.090	ND 0.099	ND 0.082
RES104-OUT-1	10/15/2015	REG	ND 0.19	0.50	ND 0.10	ND 0.086
RES105-AMB-1	10/15/2015	REG	ND 0.18	0.59	ND 0.099	ND 0.082
RES105-AMB-1	10/15/2015	FD	ND 0.18	0.56	ND 0.099	ND 0.082
RES105-PATH-1	10/15/2015	REG	0.26	2.4	ND 0.10	ND 0.084

ND = non-detect

RES105 RAW DATA PACKAGE

Parameter Name Report Units			cis-1,2-Dichloroethene ug/m3	Tetrachloroethene (PCE) ug/m3	trans-1,2-Dichloroethene ug/m3	Trichloroethene (TCE) ug/m3
Location ID	Date Sampled	Sample Purpose	Report Result	Report Result	Report Result	Report Result
BLANK-RES106	10/15/2015	FB	ND 0.10	ND 0.090	ND 0.10	ND 0.067
RES104-OUT-1	10/15/2015	REG	ND 0.10	0.12	ND 0.11	ND 0.070
RES105-AMB-1	10/15/2015	REG	ND 0.10	0.098	ND 0.10	2.6
RES105-AMB-1	10/15/2015	FD	ND 0.10	0.12	ND 0.10	2.6
RES105-PATH-1	10/15/2015	REG	ND 0.10	0.30	ND 0.11	19

ND = non-detect

ACCESS AGREEMENT

This Access Agreement ("Agreement") is entered into on this ___ day of _____ 2016, between _____ ("Licensor"), the United States Environmental Protection Agency ("EPA") and Philips Semiconductors, Inc. ("Philips"). EPA and Philips will each be referred to as a "Licensee" and collectively referred to as the "Licensees." Licensor and Licensees shall be collectively referred to as the "Parties."

Licensor consents to grant Licensees and their designated agents, contractors, and representatives access to enter the property located at _____, Sunnyvale, California (the "Premises"), for the purpose of installing, monitoring, maintaining and if necessary, removing a vapor intrusion mitigation system (the "Mitigation System"), as more fully described in Exhibit A which has been reviewed and approved by EPA and is attached to and made a part of this Agreement.

Terms and Conditions

1. Access. Subject to the terms and conditions of this Agreement, Licensor hereby grants Licensees the nonexclusive right and license to access the Premises at such times and locations and along such routes as may be acceptable to Licensor, for the sole purpose of installing, monitoring, maintaining and, if later agreed upon, removing the Mitigation System. All installation, monitoring, maintenance and if necessary, removal costs for the Mitigation System shall be at the sole cost and expense of the Licensee engaging in their respective work relating to the Mitigation System.

2. Non-Interference. The access rights granted to Licensees under this Agreement shall at all times be exercised in such a way as to minimize interference with the Licensor's present and future reasonable use and enjoyment of the Premises.

(a) Licensees each represent that they shall conduct their respective activities with due regard for the need to minimize interference with the Licensor's use and enjoyment of the Premises.

(b) While on site, each Licensee shall keep the Premises free from accumulation of materials associated with their respective activities and shall be responsible for removal of any tools, equipment, surplus materials and rubbish related to their individual work.

(c) Licensor shall not move, alter, tamper with, or damage any materials or personal property of the Licensees. If the need should arise to remove any materials or personal property from the Premises, Licensor shall notify Licensees and request that the materials or personal property be removed.

3. Termination. Licensor may terminate this Agreement at any time by written notice to Licensees. This Agreement shall otherwise terminate when EPA reasonably determines the Mitigation System is no longer needed at the Premises.

4. Restoration. Should Licensor choose to have the Mitigation System removed, each

Licensee shall, at its sole expense, remove any materials and equipment it brought onto the Premises and restore the Premises as close as practicable to its condition prior to that individual Licensee's activities.

5. Notification. Licensor shall notify Licensees promptly of any damage to or malfunction in the Mitigation System.

6. Warranty of Licensor. Licensor warrants and represents that he/she has the authority to enter into this Agreement to grant access to Licensees to perform Mitigation System installation, monitoring, maintenance and removal work, and, where applicable that Licensor has notified all impacted tenants at the Premises and secured all necessary agreements from impacted tenants.

7. Miscellaneous.

(a) Choice of Laws. This Agreement shall be governed by and interpreted in accordance with federal law and, where appropriate, the laws of the State of California.

(b) Nature of the Agreement. This Agreement does not convey any estate or interest in the Premises to Licensees or any other person or entity.

(c) Entire Agreement. This Agreement constitutes the entire agreement of the Parties relative to the subject matter hereof and supercedes any and all prior or contemporaneous proposals, negotiations, and representations of the Parties. This Agreement may not be amended or modified except in writing and signed by the Parties in the same manner as this Agreement. This Agreement may be executed in several counterparts, each of which will be fully effective as an original, all of which together will constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement on the date(s) indicated below their respective signatures.

LICENSOR(s)

Signature:_____
Name:_____
Title:_____
Date:_____

Signature:_____ [additional signatories, if applicable]
Name:_____
Title:_____
Date:_____

/ / /

Access Agreement:
_____, Sunnyvale, CA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (LICENSEE)

Signature:_____
Name:_____
Title:_____
Date:_____

PHILIPS SEMICONDUCTORS, INC. (LICENSEE)

Signature:_____
Name:_____
Title:_____
Date:_____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX
75 Hawthorne Street • San Francisco, CA 94105

March 2016

The King's Academy
Sunnyvale, California

Dear Parents, Staff and Community Members:

We are sending this letter to update you with the **results of the recent round of trichloroethene (TCE) indoor air testing that was conducted by the U.S. Environmental Protection Agency (EPA) at your school this past January and February**, associated with the long-term groundwater cleanup at the "Triple Site."

EPA is working diligently to ensure the community is being protected from any chemicals related to the Triple Site. Attached to this letter is a fact sheet summarizing the results of the last year of indoor air testing in the nearby neighborhood. This fact sheet also describes EPA's plans to expand the testing area and mitigate buildings where EPA has found an unacceptable risk.

As you may recall, the 2015 indoor air testing at your school showed that levels of TCE in classrooms fully meet EPA's requirements for protecting children's health.

Because EPA has learned more about how these levels can vary over time, EPA collected another set of samples at The King's Academy this past January and February.

In this past round of testing, indoor air samples from one building – the small auxiliary gym – showed results that were slightly higher than in the previous year, indicating that the process called vapor intrusion may be occurring. Vapor intrusion is a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings.

The good news is that the TCE levels measured in all other samples were similar to last year's results.

All of these other locations showed very low levels of TCE which do not pose a health risk.

The King's Academy Sampling Results

As expected, the majority of the locations sampled at The King's Academy in this latest sampling event showed low concentrations of TCE which do not pose a health risk. Only one room, the small auxiliary gym, showed a concentration above EPA's short-term health-protective screening level of 2 micrograms per cubic meter or µg/m^3). In this room, TCE concentrations of up to 2.2 µg/m^3 were observed. We re-tested the small auxiliary gym immediately and found that TCE levels were lower – up to 1.4 µg/m^3. However, another round of testing revealed that levels had risen again – to 2.7 µg/m^3. EPA considers the protective range of concentrations of TCE to be below 2.0 µg/m^3 for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure. These levels are very protective for school occupancy, where exposures times are much less.

Vapor Intrusion Issue

The measurements in the small auxiliary gym show that vapor intrusion is occurring, though the levels appear to vary over time. For example, all of the 2015 testing results for this building met EPA's short-term screening level. Out of precaution, we are working with the school administration to design and install a mitigation system beneath the building to prevent vapors from entering and accumulating in indoor air.

Background on EPA Investigation

As you may know, EPA has been investigating the potential for vapor intrusion at schools and residences in the Duane/San Miguel Avenue neighborhood. In 2015, EPA sampled over 120 homes and all four neighborhood schools. Five school buildings (at the Rainbow Montessori campus) and 18 households showed evidence of vapor intrusion, primarily in crawlspaces underneath buildings. EPA is overseeing the design and installation of mitigation systems for these buildings to prevent vapors from accumulating indoors. Based on the overall 2015 results, EPA is expanding the sampling area to include more residences on Coachella, San Pablo and San Patricio Avenues. More information can be found on the attached fact sheet.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building, it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it might create a health risk. *Note: Your drinking water is not affected by this contamination. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.*

Next Steps for Vapor Intrusion Mitigation in Auxiliary Gym

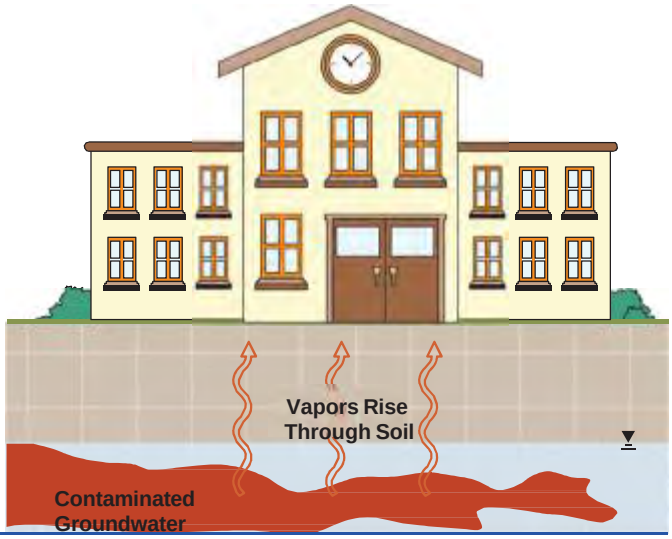
In the next few weeks EPA will oversee the design of a vapor intrusion mitigation system for the small auxiliary gym. We will work with the school administration to coordinate the timing of the installation work. More sampling events at the school are planned to help us decide whether additional mitigation systems are needed as precautionary measures to further reduce risk.

Please do not hesitate to contact me at (415) 972-3050 or by e-mail to *morash.melanie@epa.gov* if you have any questions or would like more information. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, at (415) 972-3242 or by e-mail to *diaz.alejandro@epa.gov*. EPA also has a website for the project: **www.epa.gov/region9/triplesite** which has additional information.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager



Vapor intrusion into a building

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

March 2016

Insert Resident Address Here

Re: Offer of Indoor Air Testing - Insert Resident Address Here
Vapor Intrusion Indoor Air Investigation
Philips, Advanced Micro Devices 901-902, TRW Microwave Superfund Sites ("Triple Site")

Dear XXX,

As you may know, the U.S. Environmental Protection Agency (EPA) has been testing indoor air in schools and residences in your neighborhood as part of a "vapor intrusion" investigation. "Vapor intrusion" is a process where vapors from groundwater contamination may rise and accumulate in the indoor air of nearby buildings.

EPA has found evidence of unacceptable vapor intrusion in school and residential buildings on Carmel Avenue, Duane Avenue, San Luisito Way and San Miguel Avenue. Because your property is located in very close proximity to some of the affected buildings, EPA strongly recommends that you permit us to sample your indoor air, to determine if there is a potential for trichloroethene (TCE) vapors from contaminated groundwater underneath your property to come up through the soil and accumulate indoors. There is no cost to you for this testing, which we would like to complete as soon as possible.

As of this month, we have tested all four schools in your area and 130 households. Certain rooms in six school buildings and seven residential buildings (19 households) showed evidence of unacceptable vapor intrusion. We have attached to this letter a fact sheet with more information about the project. This letter also provides you with the TCE results from a building in very close proximity to your home.

Sampling results from this nearby building do not meet EPA's requirements for being protective of public health. The elevated crawlspace levels (air samples collected beneath the building) and indoor air levels show that unacceptable vapor intrusion is occurring.

Because of these findings, EPA is offering indoor air testing to all homes in close proximity to this building. Again, there is no cost to tenants or owners for this testing. If you would like to have your home tested, please call me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov to schedule sampling.

Background on EPA Investigation: EPA has been investigating the potential for vapor intrusion—a process where vapors from groundwater contamination may migrate into the indoor air in buildings—in the Duane/San Miguel Avenue neighborhood. Certain rooms in six school buildings and 19 households have been found to be affected by vapor intrusion. We are designing mitigation systems for these buildings to prevent the vapors from continuing to come up and accumulate indoors.

Please be aware that your drinking water is not affected by contaminants in groundwater. Your water for drinking, bathing and watering gardens comes from sources such as the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and is tested to ensure that it meets all state and federal drinking water standards.

How Do the Results Affect You? Since the source of the TCE contamination is from the groundwater underneath the building, ground-level homes and ground-floor apartment units are more likely to be affected than upstairs units. This is why EPA's primary focus has been on ground-floor homes only.

Generally, if sampling results from ground-floor testing show that TCE concentrations in indoor air are below EPA's health protective screening levels, sampling in upstairs units of multi-level apartment buildings is not conducted. However, if TCE concentrations in any ground-floor apartments or underneath the building in the crawlspace are above EPA's screening levels, EPA will conduct air testing upstairs if requested by the resident.

Health Protection Goals: EPA's goal for Superfund site-related chemicals is to keep exposures as low as reasonably possible. EPA considers the safe range of TCE concentrations for residents to be below 2.0 micrograms per cubic meter or $\mu g/m^3$ (the short-term screening level). When an indoor air sample is collected and shows a concentration above the long-term screening level (0.48 $\mu g/m^3$) but below 2.0 $\mu g/m^3$, EPA uses this information to decide whether additional sampling or remediation is necessary, to confirm that levels continue to remain protective over time.

More information about TCE can be found at this website:
http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30

TCE Indoor Air Results In a Building Near Your Home: Elevated levels of TCE were detected in the air inside the ground-floor units of this nearby apartment building (up to 3.6 $\mu g/m^3$) and underneath the building in the crawlspace (up to 20 $\mu g/m^3$ in the crawlspace air). These results exceed both EPA's long-term screening level (0.48 $\mu g/m^3$) and EPA's short-term screening level (2.0 $\mu g/m^3$). The table below shows a summary of this building's sampling results.

Sample Location	TCE Concentrations (micrograms per cubic meter or µg/m^3)			
	October 2015 (24-Hour Samples)	**October 2015 (14-Day Samples)**	**November 2015 (24-Hour Samples)**	**November 2015 (12- or 14-Day Samples)**
Indoor Air Sample (Hallway – Apt. "A")	**2.6**	**2.1**	--	--
Indoor Air Sample (Living Room – Apt. "A")	--	--	**2.5**	1.9
Indoor Air Sample (Bedroom – Apt. "A")	--	--	**2.9**	**2.1**
Indoor Air Sample (Living Room – Apt. "B")	--	--	1.5	1.7
Indoor Air Sample (Living Room – Apt. "C")	--	--	**3.6**	**4.2**
Crawlspace Air Sample (Underneath building near Apt. "C")	**19**	**20**	**13**	**9.3**
Crawlspace Air Sample (Underneath building in laundry room)	--	--	**2.7**	**2.3**
Outdoor Air Sample	0.028 – 0.62 µg/m^3 (Range of outdoor air samples in the neighborhood)			
EPA Screening Levels				
Short-term Screening Level	**2.0**			
Long-term Screening Level	0.48			

Because of these findings, EPA is offering indoor air testing to all homes in close proximity to this building. Again, there is no cost to tenants or owners for this testing. If you would like to have your home tested, please call or e-mail me to schedule sampling.

Please do not hesitate to contact me at any time at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz (fluent in Spanish), at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. **Again, there is no cost to tenants or building owners for this testing or any necessary mitigation work.**

Thank you again for your cooperation and participation in this air sampling investigation.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

From: MORASH, MELANIE [mailto:morash.melanie@epa.gov]
Sent: Thursday, September 22, 2016 9:27 AM
To: Woo, Cynthia; Dou, Wenqian
Subject: FW: Latest Results From EPA Indoor Air Testing at TKA

---------- Forwarded message ----------
From: **The King's Academy** <noreply@tka.myenotice.com>
Date: Fri, Mar 18, 2016 at 1:20 PM
Subject: Latest Results From EPA Indoor Air Testing at TKA
To: kriss.hayward@tka.org

THE KING'S ACADEMY

Dear TKA Parents,

Linked here is a letter from the United States Environmental Protection Agency with the results of recent air testing for TCE (trichloroethene) along with an EPA Fact Sheet summarizing the last year of indoor testing in the nearby neighborhood and mitigation plans. **EPA considers the safe range of concentrations of TCE to be below 2.0 µg/m3 for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure**. **These levels are very protective for school occupancy, where exposure times are much less.**

Only one building on our campus, our small auxiliary gym, has tested above the safe range. Testing in the auxiliary gym had ranged from 1.5 (below the EPA requirement) to 2.7. Learning of this, we started keeping the doors open in the auxiliary gym from first arrival to last departure. **The EPA re-tested on Tuesday, March 15, and results from the laboratory on the "open door" testing showed the results dropped to within EPA's acceptable range** and were similar to the very low levels of TCE we observe in outdoor air in Sunnyvale.

EPA will be installing a vapor intrusion mitigation system in the auxiliary gym and anticipates this will occur in April. In the meantime, TKA will minimize use of the auxiliary gym and keep the doors open from first arrival to last departure.

The auxiliary gym is primarily used for rental groups which will also be informed of these results. While we do have a few P.E. classes and athletic teams that meet in there

(primarily due to weather), the exposure for any one student would probably be less than 2-3 hours total per week maximum. Again, keep in the mind, the maximum recommended exposure level of 2.0 µg/m3 assumes a 24-hour-per-day/7-day-per-week exposure.

Should you have any questions, please do not hesitate to contact Melanie Morash, EPA Project Manager, at (415) 972-3050 or email her at morash.melanie@epa.gov or contact me at scott.meadows@tka.org.

In Him,

Scott Meadows
Principal

Expansion of EPA's Testing Area Community Indoor Air Update

Progress on mitigating homes and schools affected by vapor intrusion and step-out sampling to new homes on Coachella, San Pablo & San Patricio Avenues

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • April 2016

Philips, AMD 901-902 Thompson Place, TRW Microwave Superfund Sites ("Triple Site"), Sunnyvale, California

The U.S. Environmental Protection Agency (EPA) continues to request permission from certain residents in the Duane/San Miguel neighborhood to collect indoor air samples. EPA is also expanding the sampling area to include more residences based on newly collected data. This sampling is part of a study of the potential for vapor intrusion (a process where vapors from groundwater contamination may migrate into indoor air). In 2015 and 2016, EPA sampled 130 homes and 34 buildings at all four neighborhood schools. Six of the 34 school buildings and 20 of the 130 residences tested (households on Duane Avenue, Carmel Avenue, San Luisito Way and San Miguel Avenue) showed some evidence of potential vapor intrusion, primarily in crawlspaces. EPA is evaluating sampling results and overseeing the design and installation of mitigation systems to prevent vapors from accumulating indoors. **Based on these findings, EPA continues to recommend testing in all homes in the area that have not yet been sampled.** There is no cost to owners or tenants selected for this testing. To sign up for the sampling, please contact Melanie Morash, the EPA Project Manager, at (415) 972–3050 or by e-mail to *morash.melanie@epa.gov*.

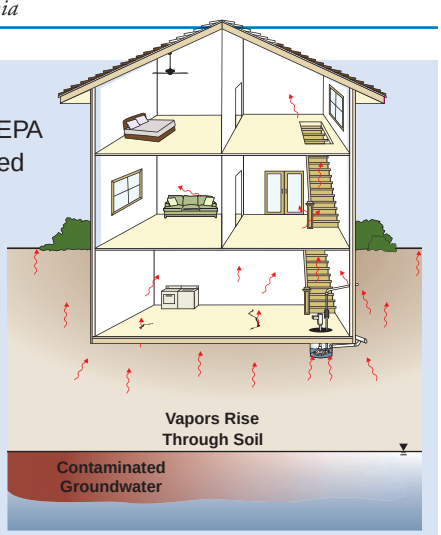


Figure 1: Vapor intrusion into a residence.

TCE and Vapor Intrusion

The main chemical of concern in this investigation is trichloroethene (TCE). TCE is a type of volatile organic chemical (VOC) which can move as vapors from groundwater through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air (see Figure 1). If this happens, and if the levels of VOCs are high enough and prolonged enough, it may create a health risk.

TCE is present in the groundwater due to historical semiconductor and other electronics manufacturing operations from the early years of Silicon Valley (dating back to the 1960s). Since the 1980s, the parties responsible for the environmental cleanup have been conducting activities to contain and clean up TCE in the shallow groundwater.

Note: Your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Sampling Results

During the past year of indoor air sampling, 130 households (out of over 400 total) and 34 school buildings – Rainbow Montessori, San Miguel Elementary, The King's Academy and Children's Creative Learning Center (CCLC) were sampled. Many households and classrooms showed no evidence of vapor intrusion, having levels similar to outdoor air (which has low concentrations of TCE typical of the South Bay area).

As expected, the majority of locations sampled at the four schools showed low concentrations of TCE which do not pose a health risk and fully meet EPA's requirements for protecting children's and teachers' health. None of the CCLC samples showed any evidence of vapor intrusion. However, TCE was detected in the crawlspaces underneath certain other school buildings and in some classroom locations. Most of these classroom locations showed TCE when EPA sampled under "ventilation-off" conditions.

Additionally, 20 of 130 residences showed some indication of vapor intrusion in crawlspaces above EPA's acceptable level. Similar to the results of the school sampling, indoor air levels in most residences met EPA's health-protective requirements. Out of precaution, mitigation systems are being designed for these residences and six school buildings. Additional testing is ongoing at the other school buildings to determine if mitigation systems or longer-term monitoring would be appropriate to further reduce risk.

In the meantime, sampling continues and residents can call anytime to sign up for testing. EPA recommends a minimum of two rounds of testing at all households, including at least one round of winter testing.

Why is the Testing Area Expanding?

Based on newly collected data showing homes affected by vapor intrusion on the easternmost boundary of the testing area (San Miguel Avenue), EPA has also expanded the sampling area. This "step-out" sampling area includes certain homes on Coachella, San Pablo and San Patricio Avenues (see Figure 2).

The "Triple Site"

Informally known by the collective term "Triple Site", the site includes three groundwater TCE sites – the Advanced Micro Devices 901/902 Thompson Place Superfund Site (AMD 901/902 Site), the Philips (formerly Signetics) Site (Philips Site), and the TRW Microwave Superfund Site (TRW Site).

The Triple Site also includes the area of the neighborhood (see map), which has been impacted by TCE-containing groundwater — elevated above the acceptable level of 5 micrograms per liter (ug/L).

What Happens Next?

Due to the potential for unacceptable vapor intrusion occurring on Duane Avenue, Carmel Avenue, San Luisito Way and San Miguel Avenue, EPA recommends testing within the sampling area shown, including the adjacent step-out area. Residents can call or e-mail anytime to sign up. When signing up for the sampling, please call (or e-mail) and leave a message with your name, telephone number, mailing address and/or e-mail address and the best time to reach you.

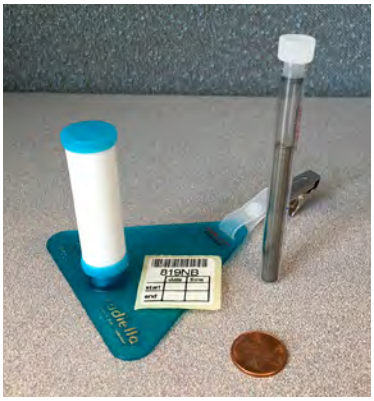


Figure 3: Home Indoor Air Sampler

With residents' permission, two rounds of sampling will be conducted, including at least one round during the winter heating season. The process for testing TCE in indoor air is not disruptive, and simply involves placing a small sampling device in the home (for example, on a shelf or counter) and in the crawlspace beneath the home over a 24-hour to 2-week period.

During the testing, residents should avoid using chemicals which can interfere with the testing (such as on dry-cleaned clothing, paints, or carpet cleaners). EPA will notify each resident individually of the results within a few weeks after the testing. If a site-related vapor intrusion issue is found, there will be no cost to residents or property owners to put in place a solution. EPA will distribute another fact sheet in late 2016 and hold another community meeting to provide an update on the investigation and discuss next steps for the community.

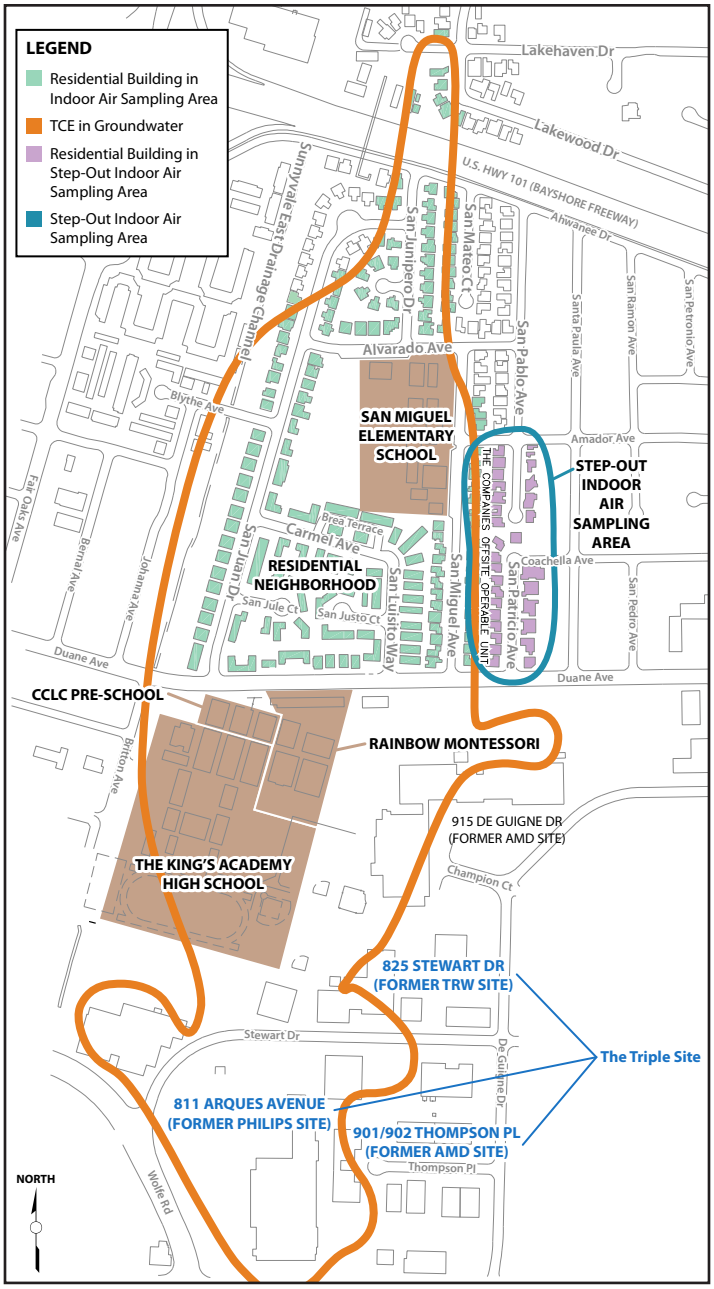


Figure 2: Original indoor air sampling area and step-out indoor air sampling area. Approximate extent of TCE contamination above 5 micrograms per liter (µg/L) in shallow groundwater (around 10 feet).

Who Do I Contact If I Would Like My Home Sampled?

Please contact any of the following if you would like your home sampled:

Melanie Morash
EPA Project Manager
(415) 972-3050
morash.melanie@epa.gov

Alejandro Diaz
(Fluent in Spanish)
EPA Community Involvement Coordinator
(415) 972-3242
diaz.alejandro@epa.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

April 2016

Revise to mail merge/Recipient name
Recipient address
City, State ZIP

FedEx Tracking No. _____
Signature Upon Delivery Requested

RESPONSE REQUIRED WITHIN FIVE (5) BUSINESS DAYS

Re: Final Request to Provide Access for Indoor Air Sampling – Insert Street Address of Building
Authority Under Section 104(e) of CERCLA
Triple Site Vapor Intrusion Investigation, Sunnyvale, California

Dear _____:

Under its authority pursuant to Section 104(e)(5)) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. § 9604(e)(5), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR § 300.400(d)(4), U.S. EPA is requesting that you provide access to your property located at _____. U.S. EPA requires access to conduct indoor air sampling to determine if there is potential for trichloroethene (TCE) vapors from contaminated groundwater underneath your property to come up through the soil and accumulate in overlying buildings – a process called "vapor intrusion."

If you do not provide access, U.S. EPA may issue an Administrative Order requiring that you provide access. Failure to comply with the Access Order may subject you to civil penalty of up to $37,500 each day as provided in Section 104(e)(5) of CERCLA, 42 U.S.C. 9604(e)(5) and the Civil Monetary Penalty Inflation Adjustment Rule, 69 Fed. Reg. 7121, 40 CFR Part 194. In addition, any person who is liable for a release or threat of release of a hazardous substance or pollutant or contaminant and who fails to comply with the Access Order may be liable for punitive damages in an amount up to three times the amount of any costs incurred by the United States as a result of such failure as provided in Section 107c(3) of CERCLA, 43 U.S.C. §9607c(3).

U.S. EPA has previously contacted you by letter three (3) times on December 3, 2014, June 26, 2015, and September 18, 2015 and has conducted three (3) rounds of door to door outreach on December 17 and 18, 2014, January 5, 2015 and September 22, 2015, requesting your consent to conduct indoor air testing at your property. We have not received a response from you authorizing access and indoor air sampling.

Section (104)e
Final Request to Provide Access for Indoor Air Sampling

As we have informed you in our letters, U.S. EPA has sampled buildings in close proximity to your property and has found evidence that unacceptable vapor intrusion is occurring in certain school buildings and residences. Measurements in these buildings showed TCE levels of up to 16 micrograms per cubic meter ($\mu g/m^3$) in indoor air and up to 20 $\mu g/m^3$ in samples obtained underneath the buildings. These concentrations exceed both U.S. EPA's long-term screening level of 0.48 $\mu g/m^3$, which is designed to protect against cancer risks, and U.S. EPA's short-term screening level of 2 $\mu g/m^3$, which is designed to protect against non-cancer risks, including effects on the immune and nervous systems and cardiac defects in the developing fetus.

Your authorization to sample is critical to ensure that your building occupants are not being exposed to TCE at unsafe levels. Any mitigation that will be necessary shall be conducted by the Responsible Parties (RPs) for the groundwater contamination. A pre-addressed and stamped return envelope is provided for your convenience. **Please sign the Sampling Access Agreement and return it to U.S. EPA no later than five (5) business days of your receipt of this letter. If we do not receive this Access Agreement within such time, U.S. EPA may issue an Administrative Order for Access.**

The Sampling Access Agreement should be sent to the following address:

Melanie Morash
U.S. EPA Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, California 94105

Please also include with the Sampling Access Agreement a list of the tenants and their telephone numbers, so that U.S. EPA can contact occupants to schedule sampling appointments. Alternatively, you may provide tenants with U.S. EPA's contact information and they can contact U.S. EPA to set up sampling appointments:

Melanie Morash
U.S. EPA Project Manager
(415) 972-3050
morash.melanie@epa.gov

Alejandro Diaz [Spanish fluent]
U.S. EPA Community Involvement Coordinator
(415) 972-3242
diaz.alejandro@epa.gov

If you have any technical questions, please contact U.S. EPA's Project Manager, Melanie Morash or U.S. EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, by telephone or e-mail provided above. If you are represented by an attorney, please have your counsel contact Thelma K. Estrada of U.S. EPA's Office of Regional Counsel, at (415) 972-3866 or by e-mail to estrada.thelma@epa.gov.

Sincerely,

John Lyons
Acting Assistant Director,
Superfund Division

Subject: FW: EPA Update Message for King's Academy

From: Woo, Cynthia [mailto:Cynthia.Woo@Cbifederalservices.com
]
Sent: Thursday, August 18, 2016 4:11 PM
To: Kriss Hayward <kriss.hayward@tka.org>; Scott Meadows <scott.meadows@tka.org>; MORASH, MELANIE <morash.melanie@epa.gov>
Subject: EPA Update Message for King's Academy

Dear Mr. Meadows,
On behalf of EPA and Melanie Morash, EPA Project Manager, I am sending you an update from EPA for distribution to your staff, students, and parents (see message below). Please feel free to revise the message as you see fit. If you have any questions, you may reach out to Melanie directly at (415) 972-3050 or email her at morash.melanie@epa.gov. She also requested that you please include her on your email list when this message is sent out.

Thank you very much.

Best regards,
Cynthia Woo

Cynthia Woo
Project Scientist
Applied Science & Engineering
Federal Services
Tel: +1 415.636.4035
Cell: +1 909.297.6987
Fax: +1 415.636.4040
cynthia.woo@CBIfederalservices.com

CB&I
101 Montgomery St., Ste 750
San Francisco, CA 94104
USA
www.CBI.com

EPA would like to provide parents, staff and students at The King's Academy with this update on the ongoing indoor air investigation and response work.

Background:

EPA has conducted multiple rounds of testing at The King's Academy, all of which showed that classrooms have health-protective levels of TCE. Only one building – the Small Auxiliary Gym – showed TCE concentrations which slightly exceed EPA's requirements.

EPA considers the safe range of concentrations of TCE to be below 2.0 micrograms per cubic meter ($\mu g/m^3$) for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure. These levels are very protective for school occupancy, where exposure times are much less. All of the buildings on campus tested in the safe range except for the small auxiliary gym.

Testing in the auxiliary gym had ranged from 1.5 $\mu g/m^3$ (below the EPA requirement) to 2.7 $\mu g/m^3$. Since the last update we sent out to parents in March 2016, we began keeping the doors open in the auxiliary gym from first arrival to last departure. The results from the laboratory on the "open door" testing showed the results

dropped to within EPA's acceptable range and were similar to the very low levels of TCE we observe in outdoor air in Sunnyvale.

Since that time, EPA has been working with the Responsible Parties for the TCE contamination to design a mitigation system for the building, which we are now ready to install.

Planned Construction Work:

On September 12 and 13, 2016, EPA will be on campus to oversee the installation of a permanent mitigation system in the auxiliary gym that will prevent vapors from entering and accumulating in the indoor air. During the construction work the gym will be unavailable for use; however, normal activities can resume immediately afterwards. After the mitigation system is installed, EPA will test the indoor air two weeks later to ensure that results are within EPA's acceptable range for TCE and protective of students and staff. EPA will also test one month later, during the upcoming winter, and then again the following spring and second winter. Quarterly inspections of the system components will take place the first year, and annual inspections in subsequent years. A remote monitoring system will also be installed, which will send an immediate notification to EPA if there are any system failures (such as due to a power outage).

Looking Ahead:

Similar to EPA's approach at the other neighborhood schools, EPA is developing a long-term air monitoring plan for The King's Academy. This plan will include additional rounds of testing, including another sampling event this upcoming winter, to confirm that all TCE levels continue to remain within EPA's acceptable range.

Should you have any questions, please do not hesitate to contact Melanie Morash, EPA Project Manager, at (415) 972-3050 or email her at morash.melanie@epa.gov, or contact me at scott.meadows@tka.org.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

August 30, 2016

[redacted]

FedEx Tracking No. [redacted]
Signature Upon Delivery Requested

RESPONSE REQUIRED WITHIN FIVE (5) BUSINESS DAYS

Re: Request to Provide Access for Indoor Air Sampling – [redacted] Carmel Avenue
Authority Under Section 104(e) of CERCLA
Triple Site Vapor Intrusion Investigation, Sunnyvale, California

Dear [redacted]:

Under its authority pursuant to Section 104(e)(5)) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. § 9604(e)(5), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR § 300.400(d)(4), U.S. EPA is requesting that you provide access to your property located at [redacted] Carmel Avenue, Sunnyvale, CA 94085.

U.S. EPA requires access to conduct indoor air sampling to determine if there is potential for trichloroethene (TCE) vapors from contaminated groundwater underneath your property to come up through the soil and accumulate in overlying buildings – a process called "vapor intrusion."

If you do not provide access, U.S. EPA may issue an Administrative Order requiring that you provide access.

U.S. EPA has previously contacted you by letter in December 2014, May 2015, June 2015, and September 2015 to request your consent to conduct air testing at your property. Subsequently, U.S. EPA contacted you by letter via Federal Express on April 21, 2016 which was received and signed for on April 22, 2016. Additionally, U. S. EPA has conducted door-to-door outreach with your tenants in December 2014 and January 2015 to provide information about the study and offer indoor air testing to households. Most recently, on July 8 and August 9, 2016, one of our technical staff reached you via telephone to discuss EPA's indoor air sampling request. During both of these telephone conversations, you indicated that you were agreeable to the sampling; however, we have not yet received a response from you authorizing access and indoor air sampling.

As we have informed you in our letters, U.S. EPA has sampled buildings in close proximity to your property and has found evidence that unacceptable vapor intrusion is occurring in certain school buildings and residences. Measurements in these buildings showed TCE levels of up to 16 micrograms per cubic meter

($\mu g/m^3$) in indoor air and up to 20 $\mu g/m^3$ in samples obtained underneath the buildings. These concentrations exceed both U.S. EPA's long-term screening level of 0.48 $\mu g/m^3$, which is designed to protect against cancer risks, and U.S. EPA's short-term screening level of 2.0 $\mu g/m^3$, which is designed to protect against non-cancer risks, including effects on the immune and nervous systems and cardiac defects in the developing fetus.

Your authorization to sample is critical to ensure that your building occupants are not being exposed to TCE at unsafe levels. Any mitigation that will be necessary shall be conducted by the Responsible Parties (RPs) for the groundwater contamination. A pre-addressed and stamped return envelope is provided for your convenience. **Please sign the Sampling Access Agreement and return it to U.S. EPA no later than five (5) business days of your receipt of this letter. If we do not receive this Access Agreement within such time, U.S. EPA may issue an Administrative Order for Access.**

The Sampling Access Agreement should be sent to the following address:

Melanie Morash
U.S. EPA Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, California 94105

Please also include with the Sampling Access Agreement a list of the tenants and their telephone numbers, so that U.S. EPA can contact occupants to schedule sampling appointments. Alternatively, you may provide tenants with U.S. EPA's contact information and they can contact U.S. EPA to set up sampling appointments:

Melanie Morash
U.S. EPA Project Manager
(415) 972-3050
morash.melanie@epa.gov

Alejandro Diaz [Spanish fluent]
U.S. EPA Community Involvement Coordinator
(415) 972-3242
diaz.alejandro@epa.gov

If you have any technical questions, please contact U.S. EPA's Project Manager, Melanie Morash or U.S. EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, by telephone or e-mail provided above. You may also contact Project Chemist, Xuan An (Ann) Truong, who is fluent in Vietnamese, by telephone (510) 230 – 9257 or e-mail (xuanan.truong@e2.com). If you are represented by an attorney, please have your counsel contact Thelma K. Estrada of U.S. EPA's Office of Regional Counsel, at (415) 972-3866 or by e-mail to estrada.thelma@epa.gov.

Sincerely,

John Lyons
Acting Assistant Director
Superfund Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

September 2016

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

We are reaching out to you to request your participation in an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale. The purpose of the study is to investigate the potential for trichloroethene (TCE) vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

After requesting permission from property owners and tenants, EPA conducted several rounds of sampling in buildings and homes in your area. **In 2015 and 2016, EPA sampled 150 homes and 34 buildings at all four neighborhood schools. Six of the 34 school buildings and more than 30 residences (households on E. Duane Avenue, Carmel Avenue, San Luisito Way, and San Miguel Avenue) showed some evidence of potential vapor intrusion, primarily in crawlspaces.** EPA is evaluating sampling results and overseeing the design and installation of mitigation systems to prevent vapors from accumulating indoors.

Based on these findings, EPA continues to recommend testing in all homes and ground-floor apartments in the area that have not yet been sampled.

There is no cost to you for this testing, which we would like to do in the next few weeks.

EPA's Sampling Access Agreement and a pre-addressed, stamped return envelope are attached to this letter. **Property owners who wish to participate in the testing should sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address: Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105.**

The process for testing for TCE in indoor air is not disruptive, and simply involves placing a small sampling device in your home and in the crawlspace beneath your home over a 24-hour to 2-week period. If we identify any products in your home that contain TCE or similar chemicals, we will ask your permission to temporarily remove these from the home before putting out our samples. EPA's goal is to conduct two sampling events, including at least one during the winter, however, we can work with you on your preferred sampling time. After testing, EPA will notify you of the results within a few weeks. If levels exceed EPA's health-based screening levels, we will present options to you on how to proceed.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Mr. Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. You may also contact our Chinese-speaking Project Engineer Ms. Wenqian Dou at (415) 265-4828 or by email to wenqian.dou@cbifederalservices.com.

We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

September 15, 2016 FedEx Tracking #: [redacted]

[redacted] Blythe Avenue, Apt. [redacted]
Sunnyvale, CA 94085

[redacted]
Property Owner

[redacted]
Sr. Property Manager

[redacted]
Law Offices of [redacted]

[redacted]
On-site Property Manager

Re: Vapor Intrusion Indoor Air Sampling Results
Residential Building #033 ([redacted] Blythe Avenue, Apt. [redacted]), Sunnyvale, CA 94085
Philips, Advanced Micro Devices 901-902, TRW Microwave Superfund Sites ("Triple Site")

Dear [redacted]:

Thank you for your cooperation and participation in the U.S. Environmental Protection Agency's (EPA) vapor intrusion indoor air sampling investigations in Sunnyvale, California. This letter confirms in writing the results of EPA's indoor air sampling for trichloroethene (TCE), conducted at your home in February 2015 and March 2016.

Your TCE Indoor Air Results: EPA considers TCE levels below 2.0 micrograms per cubic meter ($\mu g/m^3$) to be health protective. Very low levels of TCE were detected in the air inside your home (up to 0.19 $\mu g/m^3$).

These concentrations are similar to outdoor air levels measured in your neighborhood, meet EPA's short-term health protective screening level for TCE (2.0 $\mu g/m^3$) and EPA's long-term health protective screening level (0.48 $\mu g/m^3$), and do not show any evidence of vapor intrusion.

Based on the data that we have collected from your home over multiple sampling events and based upon what we have learned from our sampling efforts in the neighborhood to date, EPA does not recommend any additional indoor air sampling at your home. The sampling results from our investigation suggest that the potential for unacceptable vapor intrusion at your home is extremely low and we do not plan to perform any additional sampling at this time. However, we will continue to provide you with periodic updates about our investigation.

Background on EPA Investigation: EPA has been investigating the potential for vapor intrusion – a process where vapors from groundwater contamination may migrate into the indoor air in buildings – in the Duane/San Miguel Avenue neighborhood. Please be aware that your drinking water is not affected by contaminants in groundwater. Your water for drinking, bathing and watering gardens comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and is tested to ensure that it meets all state and federal drinking water standards.

Health Protection Goals: EPA's goal for Superfund site-related chemicals is to keep exposures as low as reasonably possible. EPA considers the safe range of TCE concentrations for residents to be below 2.0 $\mu g/m^3$ (the short-term screening level). When an indoor air sample is collected and shows a concentration above the long-term screening level (0.48 $\mu g/m^3$) but below 2.0 $\mu g/m^3$, EPA uses this information to decide whether additional sampling or response activities are necessary, to confirm that levels continue to remain protective over time. More information about TCE can be found at this website:
http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30

More About Your Results: Very low levels of TCE were detected in the air in your home during the February 2015 and March 2016 sampling events. The sample results meet EPA's short-term health protective screening level for TCE (2.0 µg/m^3) and EPA's long-term health protective screening level (0.48 µg/m^3). The table below summarizes the sampling results for your home.

One other compound that is not associated with the Triple Site was detected (perchloroethene or PCE) at low concentrations up to 0.14 µg/m^3, below both the long-term health protective screening level of 0.48 µg/m^3 and the short-term screening level of 36.5 µg/m^3.

PCE and TCE belong to a chemical category called VOCs – volatile organic compounds – which are contained in products that may be commonly found around the home (such as silicone lubricants, spot removers, adhesives, wood cleaners and dry-cleaned clothing). Additionally, because PCE is not found in the groundwater beneath your neighborhood, and the PCE concentration detected in the indoor air samples is similar to the outdoor air concentrations of PCE measured in your neighborhood, it is likely that the low levels of PCE detected in your home are associated with typical outdoor concentrations of this chemical.

Sample Location	TCE Concentrations (micrograms per cubic meter or µg/m^3)				PCE Concentrations (micrograms per cubic meter or µg/m^3)			
	02/2015 (24-Hr)	02/2015 (7-Day)	03/2016 (24-Hr)	03/2016 (14-Day)	02/2015 (24-Hr)	02/2015 (7-Day)	03/2016 (24-Hr)	03/2016 (14-Day)
Indoor Air Sample (Living Room)	0.071	0.041	0.19	0.06	0.14	0.041	0.094	0.05
Indoor Air Sample (Bathroom)	--	0.045	--	--	--	0.043	--	--
Outdoor Air Sample (Range of outdoor air samples in the neighborhood)	0.028 to 0.62				0.03 to 0.46			
EPA Screening Levels								
Short-term Screening Level	**2.0**				36.5			
Long-term Screening Level	0.48				0.48			

TCE Vapor Intrusion Findings: EPA considers these concentrations protective of your health and they meet EPA's requirements for safeguarding against potential health effects due to TCE vapor intrusion. The sample results meet EPA's short-term and long-term health protective screening levels for TCE and do not show any evidence of unacceptable vapor intrusion.

Next Steps: Our sampling results indicate that the potential for unacceptable vapor intrusion at your home is extremely low. We do not plan to conduct any additional testing at this time, but we will send you periodic updates about the project. If you have any questions, please contact me at (415) 972-3050 or by e-mail to morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. Thank you again for your cooperation and participation in this air sampling investigation.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

September 2016

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

We are reaching out to you to request your participation in an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale. The purpose of the study is to investigate the potential for trichloroethene (TCE) vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

After requesting permission from property owners and tenants, EPA conducted several rounds of sampling in buildings and homes in your area. **In 2015 and 2016, EPA sampled 150 homes and 34 buildings at all four neighborhood schools. Six of the 34 school buildings and more than 30 residences (households on E. Duane Avenue, Carmel Avenue, San Luisito Way, and San Miguel Avenue) showed some evidence of potential vapor intrusion, primarily in crawlspaces.** EPA is evaluating sampling results and overseeing the design and installation of mitigation systems to prevent vapors from accumulating indoors.

Based on these findings, EPA continues to recommend testing in all homes and ground-floor apartments in the area that have not yet been sampled.

There is no cost to you for this testing, which we would like to do in the next few weeks.

EPA's Sampling Access Agreement and a pre-addressed, stamped return envelope are attached to this letter. **Property owners who wish to participate in the testing should sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address: Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105.**

The process for testing for TCE in indoor air is not disruptive, and simply involves placing a small sampling device in your home and in the crawlspace beneath your home over a 24-hour to 2-week period. If we identify any products in your home that contain TCE or similar chemicals, we will ask your permission to temporarily remove these from the home before putting out our samples. EPA's goal is to conduct two sampling events, including at least one during the winter, however, we can work with you on your preferred sampling time. After testing, EPA will notify you of the results within a few weeks. If levels exceed EPA's health-based screening levels, we will present options to you on how to proceed.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Mr. Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. You may also contact our Chinese-speaking Project Engineer Ms. Wenqian Dou at (415) 265-4828 or by email to wenqian.dou@cbifederalservices.com.

We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX

75 Hawthorne Street • San Francisco, CA 94105

October 2016

San Miguel Elementary School
California Young World
Sunnyvale, California

Dear Parents and Community Members:

We are sending this letter to provide you with an update on the ongoing trichloroethene (TCE) indoor air investigation at your school associated with the long-term groundwater cleanup at the "Triple Site." We have also attached to this letter our most recent fact sheet which summarizes our findings at the other neighborhood schools and next steps for the community.

All of the sampling results that have been collected over the past year and a half at San Miguel Elementary School and California Young World continue to fully meet EPA's requirements for protecting children's health. In our sampling elsewhere in the neighborhood, we did measure elevated TCE levels at two other schools and more than 30 households, showing evidence of "vapor intrusion." EPA is overseeing the development of mitigation plans and installation of the mitigation systems for all of the affected homes and school buildings.

Due to these findings elsewhere in the neighborhood and as an additional safety measure, we are working with the school to install vapor mitigation systems into the new classroom buildings being constructed in the southern area of the campus, as well as at the California Young World building.

More About San Miguel Elementary School

All of the sampling results from San Miguel Elementary School have shown very low concentrations of TCE (similar to outdoor air levels) which do not pose a health risk. Sampling during the past year and half in the South Bay area have found typical outdoor air TCE levels have ranging from around 0.1 micrograms per cubic meter or µg/m3 to 0.6 µg/m3. As an added safety measure and because nearby homes have been found to be affected by vapor intrusion, we are installing vapor mitigation systems in the new classroom buildings being constructed this year. The mitigation systems are composed of a vapor barrier and passive venting system below the building, with the capability of being converted to an active system if necessary. We have already successfully installed five similar systems in nearby residential buildings where higher levels of TCE were detected. Sampling results in these buildings after the systems were installed showed that TCE concentrations dropped to non-detectable levels.

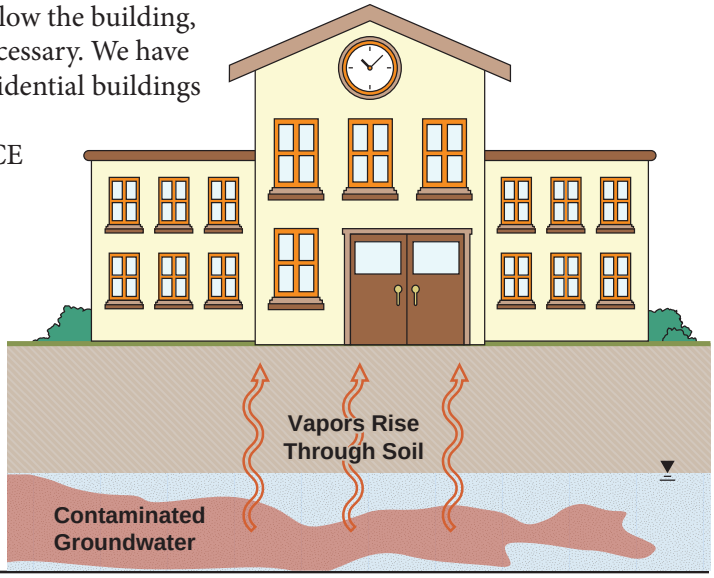


Figure 1: Vapor intrusion into a building

More About California Young World

As a precaution, we are designing and installing a mitigation system for the California Young World building concurrently with our mitigation work at San Miguel Elementary School. TCE concentrations detected inside the California Young World classroom have all been very low

and similar to outdoor air levels, fully meeting EPA's requirements for protecting children's health. Slightly elevated levels of TCE were detected underneath the building in the crawlspace, up to 1.4 µg/m3, slightly higher than outdoor air levels but still fully meeting EPA's requirements for being protective.

Background on EPA Investigation

EPA has been investigating the potential for vapor intrusion – a process where vapors from groundwater contamination may migrate into the indoor air – at schools and residences in the East Duane/San Miguel Avenue neighborhood since January 2015.

EPA considers the safe range of concentrations of TCE to be below 2.0 µg/m3 for "residential use," which assumes a 24-hour-per-day/7-day-per-week exposure. These levels are very protective for school occupancy, where exposures times are much less.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it might create a health risk.

Note: Your drinking water is not affected by this contamination in the groundwater. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

Planned Construction Work

EPA has been working with the school administration throughout the summer to design and install vapor intrusion mitigation systems in the new San Miguel Elementary School buildings. We are still working on our design for the California Young World building, which will be completed sometime this fall. Installation of the mitigation system at California Young World will likely take two days.

Looking Ahead

After the mitigation systems are installed, EPA will test the indoor and crawlspace air two weeks later to ensure that results meet EPA's requirements. EPA will also test one month later, during the upcoming winter, and then again the following spring and second winter. Quarterly inspections of the system components will take place the first year, and annual inspections in subsequent years.

Similar to EPA's approach at the other neighborhood schools, EPA is developing a long-term air monitoring plan for the remaining San Miguel Elementary School buildings to confirm that TCE levels continue to remain within EPA's acceptable range.

Please do not hesitate to contact me at (415) 972 – 3050 or by e-mail to morash.melanie@epa.gov if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz who is fluent in Spanish, at (415) 972 – 3242 or by e-mail to *diaz.alejandro@epa.gov*.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

October 2016

San Miguel Neighborhood Community
Sunnyvale, California

Dear Resident:

We are reaching out to you to request your participation in an environmental study being conducted by the U.S. Environmental Protection Agency (EPA) in this part of Sunnyvale. The purpose of the study is to investigate the potential for trichloroethene (TCE) vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

After requesting permission from property owners and tenants, EPA conducted several rounds of sampling in buildings and homes in your area. **In 2015 and 2016, EPA sampled 150 homes and 34 buildings at all four neighborhood schools. Six of the 34 school buildings and more than 30 residences (households on E. Duane Avenue, Carmel Avenue, San Luisito Way, and San Miguel Avenue) showed some evidence of potential vapor intrusion, primarily in crawlspaces.** EPA is evaluating sampling results and overseeing the design and installation of mitigation systems to prevent vapors from accumulating indoors.

Based on these findings, EPA continues to recommend testing in all homes and ground-floor apartments in the area that have not yet been sampled.

There is no cost to you for this testing, which we would like to do in the next few weeks.

EPA's Sampling Access Agreement and a pre-addressed, stamped return envelope are attached to this letter. **Property owners who wish to participate in the testing should sign the Sampling Access Agreement and return it to EPA as soon as possible at the following address: Melanie Morash, U.S. EPA Region 9, 75 Hawthorne Street (SFD-7-1), San Francisco, California 94105.**

The process for testing for TCE in indoor air is not disruptive, and simply involves placing a small sampling device in your home and in the crawlspace beneath your home over a 24-hour to 2-week period. If we identify any products in your home that contain TCE or similar chemicals, we will ask your permission to temporarily remove these from the home before putting out our samples. EPA's goal is to conduct two sampling events, including at least one during the winter, however, we can work with you on your preferred sampling time. After testing, EPA will notify you of the results within a few weeks. If levels exceed EPA's health-based screening levels, we will present options to you on how to proceed.

Please note that your drinking water does not come from groundwater in this area. Neighborhood drinking water comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Mr. Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. You may also contact our Chinese-speaking Project Engineer Ms. Wenqian Dou at (415) 265-4828 or by email to wenqian.dou@cbifederalservices.com.

We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

November 2016

Re: Philips, AMD 901-902 Thompson Place, TRW Microwave Superfund Sites ("Triple Site")
Sunnyvale, California

Dear Current Resident:

We are sending you this letter to provide an update on the ongoing investigation in the San Miguel Avenue neighborhood associated with the long-term groundwater cleanup at the "Triple Site." The purpose of the study is to investigate the potential for trichloroethene (TCE) vapor intrusion (a process where vapors from groundwater contamination may migrate into the indoor air of nearby buildings).

After requesting permission from property owners and tenants, EPA conducted many rounds of sampling in homes and school buildings in this area. **In 2015 and 2016, EPA sampled over 170 homes and 34 buildings at all four neighborhood schools. Ten school buildings and more than 30 residences (classrooms and households on East Duane Avenue, Carmel Avenue, San Luisito Way, and San Miguel Avenue) showed some evidence of potential vapor intrusion, primarily in crawlspaces.** EPA is evaluating the sampling results and overseeing the design and installation of more than 20 mitigation systems to prevent vapors from accumulating indoors.

We have attached to this letter our latest fact sheet which explains the Triple Site investigation in more detail.

Please note that your drinking water does not come from groundwater in this area. Sunnyvale drinking water comes from sources including the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.

If you have any questions, please contact me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov. For other language needs, you may also contact the following:

- Spanish: Mr. Alejandro Diaz, (415) 972-3242 or e-mail diaz.alejandro@epa.gov;
- Chinese: Ms. Wenqian Dou, (415) 265-4828 or e-mail wenqian.dou@cbifederalservices.com;
- Vietnamese: Ms Xuan An (Ann) Truong, (510) 230-9257 or e-mail xuanan.truong@e2.com;
- Hindi: Ms. Radhika Sreenivasan, (510) 210-0665 or e-mail radhika.sreenivasan@e2.com;
- Russian: Mr. Michael Yurovsky, (925) 288-2055 or e-mail michael.yurovsky@cbifederalservices.com;
- Tagalog: Ms. Nerissa Laurente Schrader, (714) 335-5193 or email nerissa.schrader@cbifederalservices.com.

We greatly appreciate your cooperation. Thank you very much.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

United States Environmental Protection Agency /
Agencia de Protección Ambiental de los Estados Unidos

The Triple Site / *Sitio Triple Site*

Reminder: Upcoming Air Testing
Recordatorio: Próximo Muestreo de Aire

If you have any questions or would like more information please contact:
Melanie Morash
EPA Project Manager
(415) 972–3050
morash.melanie@epa.gov

Si usted tiene alguna pregunta o desea más información, por favor comuníquese con:
Alejandro Diaz
Coordinador de Participación Comunitaria de la EPA (hispanoablante)
(415) 972–3242
diaz.alejandro@epa.gov

November 2016 / Noviembre de 2016

EPA is sending this postcard as a reminder that we will be reaching out to you soon to schedule a wintertime indoor air sampling appointment for TCE (trichloroethene) vapors. This testing is associated with the "Triple Site" environmental investigation and cleanup. The levels of this chemical can change over time and may be higher during the winter heating season. Therefore, EPA is planning to conduct another sampling event at all households in your neighborhood this winter (November-February) when the potential for vapor intrusion is highest.

Home Indoor Air Sampler / Aparato de Muestreo para aire de interior Para la Casa

La EPA está enviando esta notificación como un recordatorio de que se pondrá en contacto con usted pronto para programar una toma de muestras del aire interior durante el invierno para vapores de TCE (Tricloroetileno). Estas muestra están relacionadas con la investigación ambiental y la limpieza del "Sitio Triple". Los niveles de los químicos pueden variar con el tiempo, y pueden ser más altos durante la temporada de invierno. Por lo tanto, la EPA está planeando realizar otro evento de muestreo en todos los hogares que se encuentran en su vecindad durante este invierno (noviembre-febrero), cuando la posibilidad de intrusión de vapor es mayor.

United States Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-7-1)
San Francisco, CA 94105
Attn: Melanie Morash (Triple Site 11/16)

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Address Service Requested

From: Jennifer Garnett [mailto:jgarnett@sunnyvale.ca.gov]
Sent: Monday, November 28, 2016 8:33 AM
To: MORASH, MELANIE <morash.melanie@epa.gov>
Cc: Dou, Wenqian <Wenqian.Dou@cbifederalservices.com>; Woo, Cynthia <Cynthia.Woo@cbifederalservices.com>
Subject: Re: Write-up for the City of Sunnyvale

Below is the paragraph that will be running in the City Manager's report:

Status of EPA's Vapor Intrusion Work in North Sunnyvale

The Environmental Protection Agency (EPA) has been investigating the potential for vapor intrusion – a process where vapors from groundwater contamination may migrate into the indoor air in buildings – in the East Duane/San Miguel Avenue neighborhood. After requesting permission from property owners and tenants, EPA conducted many rounds of sampling in homes and school buildings in this area. In 2015 and 2016, EPA sampled over 170 homes and 34 buildings at all four neighborhood schools. Ten school buildings and more than 30 residences (classrooms and households on East Duane Avenue, Carmel Avenue, San Luisito Way, and San Miguel Avenue) showed some evidence of potential vapor intrusion, primarily in crawlspaces. EPA is evaluating the sampling results and overseeing the design and installation of more than 20 mitigation systems to prevent vapors from accumulating indoors. In 2017, EPA will continue to work with residents and property owners in the East Duane/San Miguel Avenue neighborhood to gain access into additional homes and buildings for indoor air testing. It is important to note that the City of Sunnyvale's drinking water does not come from groundwater in this area. Sunnyvale drinking water comes from sources including the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards. For additional information about this project, contact Melanie Morash, Project Manager with EPA Region 9, at morash.melanie@epa.gov or 415-972-3050.

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Jennifer Garnett, APR
Communications Officer
Communications Division
Office of the City Manager
City of Sunnyvale
E: jgarnett@sunnyvale.ca.gov
T. 408-730-7476
C. 408-718-2601

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From: Woo, Cynthia
Sent: Thursday, December 15, 2016 1:19 PM
To: 'Kriss Hayward'; 'Scott Meadows'; morash.melanie@epa.gov
Subject: King's Academy update

Dear Mr. Meadows,
On behalf of EPA and Melanie Morash, EPA Project Manager, I am sending you an update from EPA regarding the mitigation system installation in the Auxiliary Gym (see message below).

Best, Cynthia Woo

Update Email to King's Academy from EPA:

Dear Mr. Meadows and Ms. Hayward,

On behalf of EPA, we have a brief update regarding the successful installation of the mitigation system in the Small Auxiliary Gym that you may provide to parents. As you may recall, trichloroethene (TCE) sampling results in the Small Auxiliary Gym were initially found to be slightly elevated above EPA's health-protective screening level of 2 micrograms per cubic meter ($\mu g/m^3$).

As a temporary measure we posted signage on the gym to remind staff to keep the doors open while the gym was in use. Sampling conducted while the doors were open confirmed that this worked to maintain the air quality for the staff and students – levels dropped to the very low levels of TCE that we typically see in outdoor in the South Bay (around 0.2 $\mu g/m^3$), which does not pose a health risk.

As a permanent solution to the vapor intrusion issue, we oversaw the installation of a sub-slab depressurization system underneath the gym on September 12, 2016. Results from indoor air samples at the building collected after the mitigation system was installed confirmed the success of the system at preventing unacceptable vapor intrusion. TCE levels in the gym were reduced to 0.30 $\mu g/m^3$, again consistent with levels we typically see in outdoor air in an urban area.

These results fully meet EPA's requirements for being protective of students and staff. We will plan to conduct additional sampling to verify that the system is working, including during this upcoming winter.

Please let us know if you would like us to prepare an update letter or participate in any other outreach activity for faculty and parents. We would love the opportunity.

Thank you for your cooperation. If you have any questions or concerns, please let me know or you may contact the EPA Project Manager, Ms. Melanie Morash, directly at (415) 972-3050 or morash.melanie@epa.gov. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz, who is fluent in Spanish, at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov.

Regards,

Melanie Morash

Cynthia Woo
Project Scientist
Federal Services
Ph: +1 650.732.1086
cynthia.woo@CBIfederalservices.com

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX
75 Hawthorne Street • San Francisco, CA 94105

March 2017

Rainbow Montessori Child Development Center
Sunnyvale, California

Dear Parents and Staff:

We are sending this letter to update you on the ongoing trichloroethene (TCE) indoor air testing and mitigation activities that are being conducted by the U.S. Environmental Protection Agency (EPA) at your school. This work is associated with the long-term groundwater cleanup in the neighborhood. As we have informed you in our previous letters, EPA has overseen a number of activities at the school to ensure that there is no current unacceptable exposure to vapor intrusion. Indoor air testing in classrooms has been ongoing and modifications and repairs were made to air conditioning/heating systems to assure that staff and students are protected.

Over the next few months EPA will oversee the installation of TCE vapor intrusion "mitigation systems" underneath each of the five school buildings on campus. We expect that each system will take one to two days to install, and the construction work will take place over five weekends (one weekend for each of the five school buildings) or during evening hours when school is not in session. We have already successfully installed more than 10 similar systems in other school buildings and residences in the neighborhood, and these systems will be a permanent solution to protect students and staff from any TCE vapors that may rise up from the contaminated groundwater.

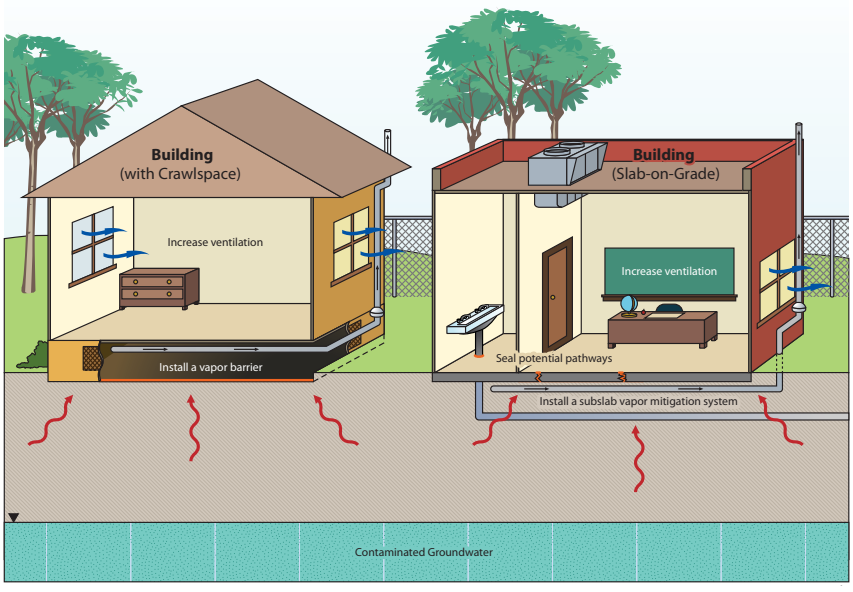


Figure 1: *Generic Vapor Intrusion Mitigation System Design*

About the Mitigation System

The mitigation systems planned for the Rainbow Montessori buildings are similar to those systems installed elsewhere in the neighborhood and use the newest technology to prevent TCE vapors from entering the school buildings. The systems are called "sub-membrane depressurization systems" and will be installed below the foundation of each building and operate continuously 24 hours per day/7 days per week. A quiet fan will mechanically draw vapors underneath the foundation and send them to a vertical riser pipe installed at the rear of each building. Vapors traveling up the riser pipe will be vented to the atmosphere above the roofline of the building.

Follow-up Sampling and Inspections

Similar to EPA's approach with the other school and residential mitigation systems, periodic air sampling and system inspections will be performed to confirm that the systems are working correctly. The mitigation systems will also have remote communications capabilities to monitor the systems continuously and send an automatic alarm to technicians in the event that there is a system failure (for example, due to a power outage).

On the right are pictures of the visible parts of the mitigation system – the other components will be installed below the building foundation.

Riser pipe and fan (inside the box)

Fan (inside the box), alarm, and ON/OFF switch near ground.

TCE and Vapor Intrusion

The main chemical of concern in this area of Sunnyvale is TCE. TCE can move as a vapor from groundwater up through soil under certain conditions. If vapors move under a building, it is possible for them to pass through cracks and other openings in the foundation and enter the indoor air. If this happens, and if the levels are high enough and prolonged enough, it may create a health risk.

Note: *Your drinking water is not affected by this contamination. Drinking water in this area of Sunnyvale comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and meets all state and federal drinking water standards.*

Contact For More Information

Please do not hesitate to contact me at (415) 972 – 3050 or by e-mail to morash.melanie@epa.gov if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz (fluent in Spanish), at (415) 972 – 3242 or by e-mail to *diaz.alejandro@epa.gov*.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

May 1, 2017 FedEx Tracking #: [redacted]

[redacted]

Re: Mitigation Plan – Addressing TCE Vapor Intrusion to Indoor Air for East Wing of Building Residential Building # 184/185/187/189/190/195 – [redacted] Carmel Ave., Sunnyvale, California 94085
Philips, Advanced Micro Devices 901-902, TRW Microwave Superfund Sites ("Triple Site")

Dear [redacted]:

Thank you for your cooperation and participation in the U.S. Environmental Protection Agency's (EPA) vapor intrusion indoor air sampling investigations in Sunnyvale, California. EPA has tested the indoor and crawlspace air at your property referenced above. The results of the testing show evidence of trichloroethene (TCE) vapor intrusion above EPA's health-protective screening levels in the indoor air and crawlspace air underneath the east wing of the building. Based on these findings, EPA recommends a mitigation system for the east wing of your building to prevent these vapors from continuing to rise up and accumulate indoors.

Your TCE Indoor Air Results: EPA considers TCE levels below 2.0 micrograms per cubic meter ($\mu g/m^3$) to be health protective. The sampling events in December 2016 and January 2017 showed higher levels of TCE in the crawlspace air underneath the east side of the apartment complex (up to 2.8 $\mu g/m^3$ underneath RES189). This side of the building includes the apartments identified as RES189, RES190, and RES195 (see the attached layout map).

TCE levels in the indoor and crawlspace air on the west side of the complex are all below EPA's short-term screening level of 2.0 $\mu g/m^3$ and are considered to be health protective. The west side of the apartment complex includes the apartments identified as RES184, RES185, and RES187 (see again the attached layout map).

Locus Technologies (Locus), a private environmental consulting firm experienced in vapor intrusion issues, prepared a mitigation plan for the east side building of the apartment complex (see attached to this letter). <u>As a reminder, there is no cost to you or your tenants for installing or maintaining the mitigation system, which will protect your tenants from any vapors that rise up from the contaminated groundwater.</u> We have already designed and installed 15 similar systems in other homes and school buildings on nearby streets, to address similarly elevated levels of TCE.

Background on EPA Investigation: As you may know, EPA has been investigating the potential for vapor intrusion—a process where vapors from groundwater contamination may migrate into the indoor air in buildings—in the East Duane / San Miguel Avenue neighborhood.

Please be aware that your drinking water is not affected by contaminants in groundwater. Your water for drinking, bathing and watering gardens comes from the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and is tested to ensure that it meets all state and federal drinking water standards.

As of this month, EPA has tested all four schools in your area and over 200 households. Certain rooms in seven school buildings and 55 households have been found to be affected by vapor intrusion. EPA is overseeing the development of mitigation plans and installation of the mitigation systems for all of the affected properties.

Health Protection Goals: EPA's goal for Superfund site-related chemicals is to keep exposures as low as reasonably possible. EPA considers the safe range of TCE concentrations for residents to be below 2.0 $\mu g/m^3$ (the short-term screening level). When an indoor air sample is collected and shows a concentration above the long-term screening level (0.48 $\mu g/m^3$) but below 2.0 $\mu g/m^3$ EPA uses this information to decide whether additional sampling or response activities are necessary, to confirm that levels continue to remain protective over time. More information about TCE can be found at this website: http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30.

Your TCE Indoor Air Results: The sampling events in December 2016 and January 2017 showed elevated levels of TCE in the crawlspace air underneath the east side of the apartment complex (up to 2.8 $\mu g/m^3$). **These results indicate that unacceptable vapor intrusion is occurring in the east side of the apartment complex.**

A mitigation plan has been prepared by Locus specifically for the east wing of your building to address the vapor intrusion issues. The table on the next page shows a summary of the TCE sampling results for each of the apartments tested.

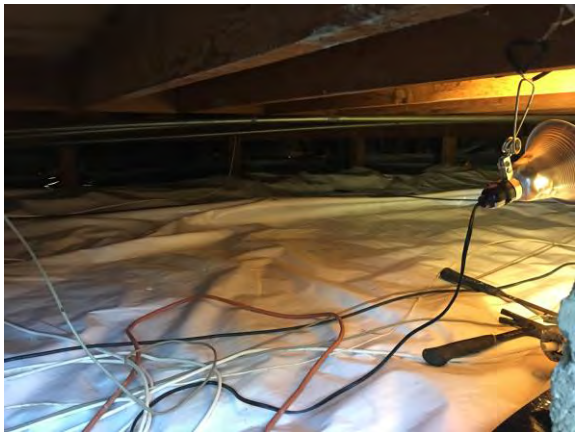
Sample Location	TCE Concentrations (micrograms per cubic meter or µg/m^3)			
East Side Building of the Apartment Complex				
RES189 – [redacted]				
	Dec 2016 (24-Hour)	**Dec 2016 (15-Day)**	**Jan 2017 (24-Hour)**	**Jan 2017 (14-Day)**
Indoor Air (Living Room)	0.47	0.63	--	--
Crawlspace Air Sample	**2.3**	**2.1**	**2.8**	1.6
RES190 – [redacted]				
Indoor Air (Living Room)	1	1.3	--	--
Crawlspace Air Sample	**2.5**	**2.7**	**2.5**	2.1
RES195 – [redacted]				
	--	--	**Jan 2017 (24-Hour)**	**Jan 2017 (14-Day)**
Crawlspace Air Sample	--	--	1.6	1.1
West Side Building of the Apartment Complex				
RES184– [redacted]				
	Dec 2016 (24-Hour)	**Dec 2016 (15-Day)**	**Jan 2017 (24-Hour)**	**Jan 2017 (14-Day)**
Indoor Air (Living Room)	0.51	0.52	--	--
Crawlspace Air Sample	0.78	1.5	1.1	--
RES185 – [redacted]				
Indoor Air (Living Room)	0.54	0.5	--	--
Crawlspace Air Sample	--	--	0.9	1.0
RES187 – [redacted]				
Indoor Air (Living Room)	0.16	0.38	--	--
Crawlspace Air Sample	--	--	0.38	0.38
Outdoor Air Sample – During your testing period	0.12 – 0.27	0.47	Up to 0.11	0.17
Neighborhood Outdoor Air	0.028 – 1.5 µg/m^3			
	(Range of outdoor air samples in the neighborhood)			
EPA Screening Levels				
Short-term Screening Level	2.0			
Long-term Screening Level	0.48			

About the Proposed Mitigation System: The mitigation system that EPA recommends for your building uses the best, most reliable technology available today to prevent TCE vapors from continuing to enter your building. The system is called a "sub-membrane depressurization system" and would be installed in the crawlspace underneath the east wing of the building. It is described in detail in the attached mitigation plan, which includes a generic system diagram.

Below are some pictures taken from a nearby property that shows what the mitigation system looks like:

Riser pipe and fan (inside the box)

Fan (inside the box), alarm, and ON/OFF switch near ground.



Vapor barrier membrane in the crawlspace underneath the building (during installation).

View of vapor barrier at entry to crawlspace.

Installation is expected to take 1 to 3 days depending on the specific site conditions. It is expected that your tenants will be able to maintain normal activities throughout the installation process. The construction work will be somewhat noisy during the installation, however, and so we would coordinate with you and your tenants on your preferred days and times.

Next Steps: <u>If you have any questions about the attached mitigation plan, we can schedule an in-person meeting with you to answer any of your questions or concerns.</u> Please call me at (415) 972-3050 or e-mail

me at morash.melanie@epa.gov if you have any questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz (fluent in Spanish), at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov.

Again, there is no cost to you and your tenants for the mitigation system installation process and the operation and maintenance of the system.

Thank you again for your cooperation and participation in this air sampling investigation.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

May 18, 2017

FedEx Tracking #: [redacted]
Signature Upon Delivery Requested

[redacted]

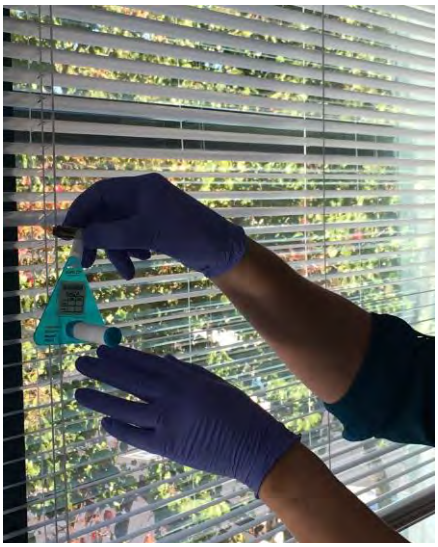
Re: Offer of Indoor Air Testing – [redacted] Brea Terrace, Sunnyvale, CA 94085
Vapor Intrusion Indoor Air Investigation
Philips, Advanced Micro Devices 901-902, TRW Microwave Superfund Sites ("Triple Site")

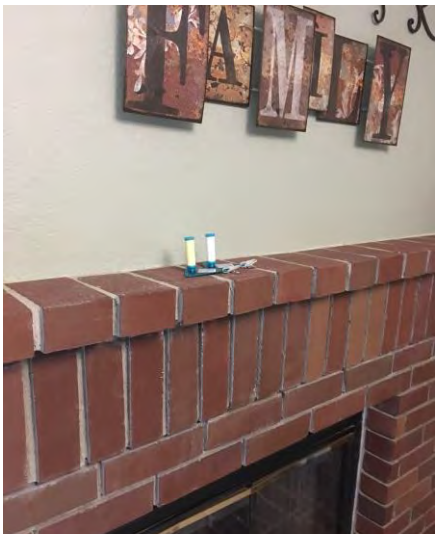
Dear [redacted]

As you may know, the U.S. Environmental Protection Agency (EPA) has been testing indoor air in schools and residences near your rental property as part of a "vapor intrusion" investigation. "Vapor intrusion" is a process where vapors from groundwater contamination may rise and accumulate in the indoor air of nearby buildings.

We previously sent you letters **requesting your permission to sample your rental property** referenced above in December 2014, May 2015, June 2015, September 2015, and September 2016 to request your consent to conduct air testing at your properties. Then on August 3, 2016 we sent you a similar letter via FedEx, which was not successfully delivered. Subsequently, we sent you another letter via FedEx in October 2016, requesting access for indoor air testing, which was successfully delivered and signed for on October 28, 2016. To date, we have not yet received a signed access agreement, giving EPA permission to sample your rental property. **This latest letter includes some photos that summarize how quick and straightforward the testing process is.**

Sampling Process – Simple & Quick – Identify Convenient Indoor Sample Locations





A few small samplers are placed in the home (usually in the living room) in a convenient location. The photo on the left shows samplers being attached to window blinds. The photo on the right shows samplers placed on the mantel above the fireplace

We conduct a short 10-minute survey with the resident about how the home is heated and the types of chemicals stored.

We also place a few samplers underneath the home in the crawlspace, if present, to measure TCE vapor levels below the building. The crawlspace entry is typically either outside at the back of the building or indoors in a bedroom

EPA has found evidence of unacceptable vapor intrusion in schools and residential buildings on Carmel Avenue in extremely close proximity to Brea Terrace, as well as on East Duane Avenue, San Luisito Way and San Miguel Avenue. Because your rental property is located in extremely close proximity to some of the affected buildings, EPA strongly recommends that you permit us to sample the indoor air in your building by signing and returning the enclosed sampling access agreement, to determine if there is a potential for trichloroethene (TCE) vapors from contaminated groundwater underneath your property to come up through the soil and accumulate indoors.

Please note that there is no cost to you for this testing.

As of this month, we have tested all four schools in your area and more than 225 households. Certain rooms in seven school buildings and twelve residential buildings (55 households) showed evidence of unacceptable vapor intrusion. We have attached to this letter a fact sheet with more information about the project. This letter also provides you with the TCE results from a building in very close proximity to your property.

Because of these findings, EPA is offering indoor air testing to all homes in close proximity to this building. Again, there is no cost to tenants or owners for this testing. Please sign the attached access agreement form and mail it back to EPA using the self-addressed and stamped envelope. You can also call me at (415) 972-3050 or e-mail me at morash.melanie@epa.gov to schedule sampling.

We will work with you and your tenant to identify a convenient time for the sampling. The entire sampling process takes less than 20 minutes. We will pick up the samples 24 hours after we place them and then again in 14 days. We will make reminder phone calls to schedule the 14-day sample pickups at a time that is convenient for you and your tenant. The sample pickups usually take less than 5 minutes.

Please be aware that your drinking water is not affected by contaminants in groundwater. Your water for drinking, bathing and watering gardens comes from sources such as the Hetch Hetchy Reservoir in the Sierra Nevada Mountains and is tested to ensure that it meets all state and federal drinking water standards.

TCE Indoor Air Results In a Building Near Your Home: Elevated levels of TCE were detected in the air inside the ground-floor units of this nearby apartment building (up to 4.2 µg/m^3) and underneath the building in the crawlspace (up to 20 µg/m^3 in the crawlspace air). These results exceed both EPA's long-term screening level (0.48 µg/m^3) and EPA's short-term screening level (2.0 µg/m^3). The table below shows a summary of this building's sampling results.

Sample Location	**TCE Concentrations (micrograms per cubic meter or µg/m^3)**			
	October 2015 (24-Hour)	**October 2015 (14-Day)**	**November 2015 (24-Hour)**	**November 2015 (12- or 14-Day)**
Indoor Air Sample (Hallway – Apt. "A")	**2.6**	**2.1**	--	--
Indoor Air Sample (Living Room – Apt. "A")	**--**	**--**	**2.5**	1.9
Indoor Air Sample (Bedroom – Apt. "A")	**--**	**--**	**2.9**	**2.1**
Indoor Air Sample (Living Room – Apt. "B")	**--**	**--**	1.5	1.7
Indoor Air Sample (Living Room – Apt. "C")	**--**	**--**	**3.6**	**4.2**
Crawlspace Air Sample (Underneath building near Apt. "C")	**19**	**20**	**13**	**9.3**
Crawlspace Air Sample (Underneath building in laundry room)	**--**	**--**	**2.7**	**2.3**
Outdoor Air Sample	0.028 – 0.62 µg/m^3 (Range of outdoor air samples in the neighborhood)			
EPA Screening Levels				
Short-term Screening Level	2.0			
Long-term Screening Level	0.48			

Because of these findings, EPA is recommending indoor air testing to all homes in close proximity to this building. Again, there is no cost to tenants or owners for this testing.

Please sign the attached access agreement form and mail it back to EPA using the self-addressed and stamped envelope. You can also call or e-mail me to schedule sampling.

Please do not hesitate to contact me at any time at (415) 972-3050 or by e-mail to morash.melanie@epa.gov if you have questions. You may also contact EPA's Community Involvement Coordinator, Alejandro Diaz (fluent in Spanish), at (415) 972-3242 or by e-mail to diaz.alejandro@epa.gov. You may also contact our Chinese-speaking staff, Wenqian Dou, at (415) 265-4828 or by email to wenqian.dou@cbifederalservices.com.

Again, there is no cost to tenants or building owners for this testing. Thank you again for your cooperation and participation in this air sampling investigation.

Sincerely,

Melanie Morash

Melanie Morash, EPA Project Manager

Silicon Valley's Toxic Past Haunts Sunnyvale Neighborhood

Alejandro Diaz, the EPA's community involvement coordinator for the Triple Site, stands outside a large groundwater-cleanup system near Planet Granite in Sunnyvale. (*Beth Winegarner/KQED*)

By Beth Winegarner
JUNE 15, 2017

SHARE

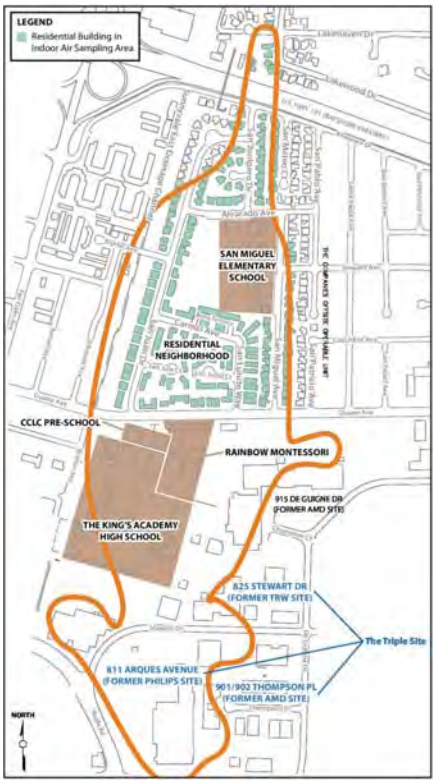
Sunnyvale's San Miguel neighborhood, with its leafy trees and modest houses, is home to hundreds of families and four schools for young children. Underneath these quiet streets lies a shadow of Silicon Valley's past: groundwater contaminated with a solvent once used to make computer chips, and known to cause cancer and birth defects.

Santa Clara has 24 federal Superfund sites, more than any other county in the nation.

That chemical, known as trichloroethylene or TCE (https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/trichloroethylene-tce), was as crucial to chipmakers in the 1960s and 1970s as yeast is to a bakery. TCE is a powerful solvent used to clean silicon wafers before the chip design is etched onto them. And it's responsible for nearly half the federal Superfund sites in Santa Clara County (https://en.wikipedia.org/wiki/List_of_Superfund_sites_in_California#Santa_Clara_County). These are areas the U.S. Environmental Protection Agency designates as the nation's most toxic.

Santa Clara has 24 Superfund sites, more than any other county in the nation, according to former EPA regional director Jared Blumenfeld. The neighborhood of San Miguel is located within one of them.

When TCE is present in groundwater, it can turn to vapor, seeping through cracks in building frames and into homes and classrooms. Short-term exposure can cause slowed breathing, light-headedness and headaches; over the longer term, TCE exposure causes cancer, particularly kidney cancer and non-Hodgkin lymphoma. And in 2011, a study appeared to show (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3339451/)that fetuses exposed to TCE in the first trimester have a higher risk of heart defects at birth. Socioeconomic differences could have influenced the results, though researchers tried to account for that.



Map of the Triple Site area in Sunnyvale, Calif. *(U.S. Environmental Protection Agency)*

Years of Contamination

A half-mile south of the San Miguel neighborhood is Lowe's Home Improvement, built on the site where Signetics Inc. (https://en.wikipedia.org/wiki/Signetics)—which became Philips Semiconductors (http://www.usa.philips.com/) in 1975—left massive amounts of trichloroethylene in the soil and groundwater from nearly 30 years of chip manufacturing. Next to Lowe's is a large, vacant dome of soil carpeted with dry grass.

"Here's where we have the highest concentrations of TCE," says EPA site manager Melanie Morash, gesturing at the mound. This is essentially Ground Zero for what the EPA calls the Triple Site.

The Triple Site gets its name from the three chipmakers responsible for the contamination: Philips, Advanced Micro Devices (http://www.amd.com/en/home) and TRW Microwave (https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/vwsoalphabetic/TRW+Microwave,+Inc.+(Building+825)). In the 1960s and '70s, these companies stored TCE in underground tanks for later use. But the tanks and pipelines sometimes ruptured, leaking TCE into the soil and groundwater. It wasn't until the 1980s, when the EPA launched its Superfund program (https://en.wikipedia.org/wiki/Superfund) to clean up the nation's most toxic sites, that these properties began to get attention. By then, the TCE had spread through groundwater a mile to the north, underneath hundreds of homes and apartments and all four schools.

Cleanup Begins

In the early 1980s, the EPA worked with the manufacturers to clean up the toxic plume by excavating soil and treating the water. One method decontaminates the water by exposing it to ultraviolet light; the other oxygenates the water, releasing the TCE into the air, where it disperses. Although it isn't ideal to make TCE airborne, it reduces concentrations enough that it isn't a health risk to people, Blumenfeld said.


(https://ww2.kqed.org/futureofyou/wp-content/uploads/sites/13/2017/06/6-melanie-dome.jpg)

EPA Triple Site site manager Melanie Morash at the dome of earth near the former Philips Semiconductor property, where TCE contamination is concentrated. *(Beth Winegarner/KQED)*

Across the street from Ground Zero, in the parking lot of Planet Granite, gym-goers breeze past a fenced-off cluster of machinery. The systems hum as they pump groundwater from beneath the soil, aerate the water to disperse toxic chemicals, and return the water to the aquifer. This is one of the Phillips treatment plants.

In the early 2000s, AMD and TRW switched to a method pioneered at Stanford University (http://news.stanford.edu/news/1997/april23/tce.html) in which natural bacteria break down the TCE. The bacteria are fed molasses, lactose or vegetable oil to boost their population, creating enough microbes to transform TCE into harmless components, according to Michael Calhoun, a geologist with Haley & Aldrich Inc. and a consultant for AMD.

Bioremediation has been successful for TRW and AMD. Philips—which is now responsible for the remaining cleanup at the Triple Site—held off, sticking to traditional methods. It wasn't until 2016 that Philips began testing bioremediation.

Spokeswoman Silvie Casanova declined to comment on why Philips waited so long to try the method. It's unclear whether it will work as well now.

"If you have a contaminant released into the ground and it sits there for a while, it can diffuse into the soil, and then it's more difficult to get back out," Calhoun said. "Even if you clean up the groundwater, it will continue to diffuse from the soil back into the water."

Two air monitors inside a classroom at San Miguel Elementary School in Sunnyvale. The devices monitor inside buildings for signs of TCE vapor. They must be in place for at least 24 hours to get accurate results. *(Beth Winegarner/KQED)*

Fighting to Protect Public Health

After the 2011 study revealed the risk for birth defects from TCE (https://www.atsdr.cdc.gov/phs/phs.asp?id=171&tid=30), the EPA worked to update its process of notifying people about contamination. Previously, the agency tested buildings in Superfund zones quarterly, and then notified occupants of the results four to five months later, said former regional director Blumenfeld. But the risk to fetuses is highest in the first trimester, meaning pregnant women needed the information much sooner.

Getting the agency to change was an uphill battle. Chipmakers hired lawyers to fight back. EPA headquarters in Washington D.C. told Blumenfeld to hold off because it was working on new national guidelines, but they never materialized, he said.

If you like this story, you might like these:


Big Drop in Chemical Levels in Girls Who Switched Cosmetics (https://ww2.kqed.org/stateofhealth/2016/03/07/big-drop-in-chemical-levels-in-girls-who-switched-cosmetics/)

Blumenfeld eventually won. Under the new notification requirements

(https://ww2.kqed.org/science/2016/05/16/bill-would-require-fda-to-evaluate-chemicals-in-cosmetics-for-the-first-time-ever/)

(https://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/6a24ed351efe25b888257d1600765 9e8/$FILE/R9%20TCE%20Action%20Levels%20and%20Recs%20Memo%207_14.pdf) adopted in 2014, the EPA is required to test air quality inside buildings vulnerable to TCE vapor, install mitigation measures "quickly" and retest to make sure they're working. When exposures reach a certain level, those mitigations must happen immediately, and residents aren't allowed back in until it's safe.

Knocking on Doors

Doing all that testing, though, meant getting permission from property owners. The schools within the Triple Site complied quickly, but residents were another story. EPA workers, led by Morash and Alejandro Diaz, the EPA's community involvement coordinator for the site, began going door-to-door to ask if they could test the air inside.

The San Miguel neighborhood includes mostly small, single-family homes with grassy front yards. Sprinkled among them are several modest-sized apartment buildings. During the day, the streets are quiet; almost nobody remains outside. The neighborhood is also extremely diverse, with large concentrations of Latino, Asian and South Asian residents. Diaz said the EPA did outreach in several languages, including Vietnamese, Tagalog, Punjabi and Urdu.

(https://ww2.kqed.org/futureofyou/wp-content/uploads/sites/13/2017/06/3-Riser-pipe-and-fan-inside-the-box.jpg)

This riser pipe and fan are part of a system that diverts TCE vapor from underneath a building to its roof, where it's released into the air rather than going inside the building. *(EPA)*

"The idea is to remove any barriers and make it the least scary possible," he said.

Since early 2015, the team has knocked on more than 500 doors—every property in the Triple Site zone—and tested every school building. About 225 households have allowed testing. The team has detected concerning levels of TCE vapor in 55 households and 37 school buildings, Morash said. Buildings at Rainbow Montessori, San Miguel Elementary and King's Academy all tested positive for TCE vapor; mitigation systems are in place in the schools now, and their air is monitored regularly.

About 30 properties, which include some 100 households, have refused air testing, Huitric said; those who said no haven't told the team why. The EPA keeps in touch with the property owners, ready to act if they change their minds.

Shashi Jaggia, who has owned a 12-unit apartment building on Duane Avenue within the Triple Site zone since 1999, cooperated with the EPA when they came calling. Jaggia had no idea her tenants were being exposed to TCE until the EPA contacted her a couple of years ago. But she wasn't surprised.

"I'm in the real estate business," she said. "I know there's lots of contamination in the groundwater in the area."

During the first year after installing the systems, the EPA tests the air frequently to make sure levels remain safe. If they do, the tests are less frequent in following years. That's the protocol for all properties in the Triple Site, Huitric said.

For now, cleanup, testing and mitigation at the Triple Site is expected to continue indefinitely, until the TCE levels in both groundwater and indoor air are safe. President Donald Trump's proposed budget (https://www.theatlantic.com/science/archive/2017/05/trump-epa-budget-noaa-climate-change/527814/) includes a 31.4 percent cut to the EPA, including $330 million in cuts to the Superfund program. Philips is bankrolling cleanup costs at the Triple Site, but other elements of the process could be in trouble, Blumenfeld said, including enforcement.

"We're not planning for anything until we know for a fact what's happening," said Caleb Shaffer, section chief for Superfund's California Cleanup Section. "We can't predict the future."

EXPLORE: HEALTH POLICY (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/CATEGORY/HEALTH-POLICY/), KQED FUTURE OF YOU (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/CATEGORY/FUTURE-OF-YOU/), KQED NEWS (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/CATEGORY/KQED-NEWS/), BIOREMEDIATION (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/TAG/BIOREMEDIATION/), KQEDSCIENCE (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/TAG/KQEDSCIENCE/), NEWS (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/TAG/NEWS/), SILICON VALLEY (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/TAG/SILICON-VALLEY/), SUNNYVALE (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/TAG/SUNNYVALE/), SUPERFUND (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/TAG/SUPERFUND/), TCE (HTTPS://WW2.KQED.ORG/FUTUREOFYOU/TAG/TCE/)

(https://ww2.kqed.org/futureofyou/2017/06/15/silicon-valleys-toxic-past-haunts-sunnyvale-neighborhood/?share=pinterest&nb=1)

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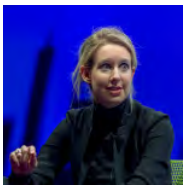

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ACCESS AGREEMENT

This Access Agreement ("Agreement") is entered into on this ___ day of _____ 2018, between _____ ("Licensor"), the United States Environmental Protection Agency ("EPA") and Philips Semiconductors, Inc. ("Philips"). EPA and Philips will each be referred to as a "Licensee" and collectively referred to as the "Licensees." Licensor and Licensees shall be collectively referred as the "Parties."

Licensor consents to grant Licensees and their designated agents, contractors, and representatives access to enter the property located at _____, Sunnyvale, California (the "Premises"), for the purpose of installing, monitoring, maintaining and if necessary, removing a vapor intrusion mitigation system (the "Mitigation System"), as more fully described in Exhibit A which has been reviewed and approved by EPA and is attached to and made a part of this Agreement.

Terms and Conditions

1. Access. Subject to the terms and conditions of this Agreement, Licensor hereby grants Licensee the nonexclusive right and license to access the Premises at such times and locations and along such routes as may be acceptable to Licensor, for the sole purpose of installing, monitoring, maintaining and, if later agreed upon, removing the Mitigation System. All installation, monitoring, maintenance and if necessary, removal costs for the Mitigation System shall be the sole cost and expense of the Licensee engaging in their respective work relating to the Mitigation System.

2. Non-Interference. The access rights granted to Licensees under this Agreement shall at all times be exercised in such a way as to minimize interference with the Licensor's present and future reasonable use and enjoyment of the Premises.

(a) Licensees each represent that they shall conduct their respective activities with due regard for the need to minimize interference with the Licensor's use and enjoyment of the Premises.

(b) While on site, Licensee shall keep the Premises free from accumulation of materials associated with their respective activities and shall be responsible for removal of any tools, equipment, surplus materials, and rubbish related to their individual work.

(c) Licensor shall not move, alter, tamper with, or damage any materials or personal property of the Licensee. If the need should arise to remove any materials or personal property from the Premises, Licensor shall notify Licensee and request that the materials or personal property be removed.

3. Termination. Licensor may terminate this Agreement at any time by written notice to Licensee. This Agreement shall otherwise terminate when EPA reasonably determines the Mitigation System is no longer needed at the Premises.

4. Restoration. Should Licensor choose to have the Mitigation System removed, each

Licensee shall, at its sole expense, remove any materials and equipment it brought onto the Premises and restore the Premises as close as practicable to its condition prior to that individual Licensee's activities.

5. Notification. Licensor shall notify Licensees promptly of any damage to or malfunction in the Mitigation System.

6. Warranty of Licensor. Licensor warrants and represents that he/she has the authority to enter into this Agreement to grant access to Licensees to perform Mitigation System installation, monitoring, maintenance and removal work, and, where applicable that Licensor has notified all impacted tenants at the Premises and secured all necessary agreements from impacted tenants.

7. Miscellaneous.

(a) Choice of Laws. This Agreement shall be governed by and interpreted in accordance with federal law and, where appropriate, the laws of the State of California.

(b) Nature of the Agreement. This Agreement does not convey any estate or interest in the Premises to Licensee or any other person or entity.

(c) Entire Agreement. This Agreement constitutes the entire agreement of the parties relative to the subject matter hereof and supercedes any and all prior or contemporaneous proposals, negotiations, and representations of the parties. This Agreement may not be amended or modified except in writing and signed by the parties in the same manner as this Agreement. This Agreement may be executed in several counterparts, each of which will be fully effective as an original, all of which together will constitute one and the same instrument.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the date(s) indicated below their respective signatures.

LICENSOR(s)[1]

Signature:_____

Name:_____

Title:_____

Date:_____

Signature:_____[additional signatories, if applicable]

Name:_____

Title:_____

[1] If there are multiple licensors, i.e., property owners, please have ALL licensors sign on this form.

Access Agreement:
_____, Sunnyvale, CA

Date:_____

U.S. ENVIRONMENTAL PROTECTION AGENCY (LICENSEE)

Signature:_____

Name:_____

Title:_____

Date:_____

PHILIPS SEMICONDUCTORS, INC. (LICENSEE)

Signature:_____

Name:_____

Title:_____

Date:_____

准入协议书

该准入协议书（以下简称“协议书”）由_____（以下简称“许可人”）与美国国家环境保护局（以下简称“环保局“）以及飞利浦半导体股份有限公司（以下简称“飞利浦”）2018 年_____月_____日签署。环保局和飞利浦在该协议书里均称作“被许可人”并统称为″被许可方″。许可人和被许可方在该协议书中统称“协议方”。

许可人同意给与被许可方以及其指定代理人，承包商，及代理方许可进入以下地址的房屋：_____，Sunnyvale，California（以下简称“物业”）并按该协议书附件 A 所述安装、监测、以及必要时维修和拆除有机蒸气入侵治理系统（以下简称“治理系统”）。附件 A 中的治理方案作为该协议书的一部分，已由环保局审阅并批准。

条款与条件

1．准入。在受该协议书的条款与条件的约束下，许可人在此授予被许可方非专属的权利及许可在和许可人提前商定的时间、地点、以及路径以仅为安装、监控、维护、以及日后经双方同意拆除治理装置为目的的前提下而进入物业。所有与安装、监控、维护、并按需要拆除治理装置相关的费用应全部由被许可人承担。

2．零干扰。在此协议书中给与被许可方准入权的行使必须在任何时候都遵照尽量减少对许可人现在及将来使用及享用物业权利的原则。

(a) 各被许可人将承诺其在物业中的任何活动应以尊重许可人对物业的正常使用和享用为前提。

(b) 进入物业后，各被许可人应避免在物业内堆积相关物品并及时清理其带入的工具、设备、多余材料、以及由其产生的废物。

(c) 许可人不得移动、更改、调整、或损坏被许可人的材料或个人物品。如确有需要从物业中移除材料或个人物品，许可人应通知被许可人并要求其移除相关材料和个人物品。

3．终止。许可人可在任何时候书面通知被许可方终止该协议。否则，该协议书将在环保局评估认为物业不再需要治理装置的情况下自行终止。

4．恢复。如果许可人最终要求拆除治理装置，各被许可人应移除任何其安装在物业中的物品和设备并尽可能在合理的范围内将物业恢复至各被许可人开展其治理活动前的状况，其一切相关费用应由各被许可人承担。

5．通知。如治理装置有任何损坏或出现故障，许可人应及时通知被许可方。

6．许可人保证。许可人保证其拥有签署本协议书的资格并给予被许可方进入物业安装、监控、维护、以及拆除治理装置的权利。若适用于该物业，许可人应通知相关租户该协议书内容并从相关租户处获取执行该协议书所需的其它准许。

7．其它款项。

(a) 法律适用。该协议书应按照联邦法律和相关适用的加州法律作出解释。

(b) 该协议的性质。该协议不向被许可方或其它个人或实体转让任何物业的所有权或相关权益。

(c) 完整协议。该协议书包含双方相关这一事项的完整协议，并取代所有之前或同期产生的动议、谈判、以及双方的交涉。未经双方书面签署同意，本协议书不得有任何修订或改动。该协议可以分几个副本执行，每个副本都将与完整协议同样有效，各副本的组合构成该完整协议。

兹证明，协议双方在此由如下所示的日期签署执行本协议。

许可人[1]

签名:_____

姓名:_____

职务:_____

日期:_____

许可人

签名:_____

姓名:_____

职务:_____

日期:_____

美国国家环保局（被许可人）

签名:_____

姓名:_____

职务:_____

日期:_____

飞利浦半导体股份有限公司（被许可人）

签名:_____

姓名:_____

职务:_____

日期:_____

[1]如有多位业主，务必请所有业主签署该协议书。

ACUERDO PARA ACCESSO

Este Acuerdo de Acceso ("Acuerdo") se introduce en este día ____ de _____ 2018, entre _____ ("Propietario"), la Agencia de Protección Ambiental de los Estados Unidos ("EPA") y Philips Semiconductores, Inc. ("Philips"). EPA y Philips serán cada uno denominado "Licenciatario" y colectivamente denominados los "Licenciatarios". El Propietario y los Licenciatarios serán colectivamente denominados como las "Partes".

El Propietario consiente conceder a los Licenciatarios, y a sus agentes designados, contratistas y representantes acceso para entrar en la propiedad ubicada en _____, Sunnyvale, California (la "Propiedad"), con el fin de instalar, monitorizar y mantener un sistema de mitigación de intrusión de vapor ("Sistema Mitigación") más plenamente descrito en el Anexo A, adjunto y realizado como parte de este Acuerdo.

Términos y Condiciones

1. Acceso. Sujeto a los términos y condiciones de este acuerdo, el Propietario otorga a los Licenciatarios el derecho no exclusivo y licencia para acceder a la Propiedad en los tiempos y lugares y a través de las rutas que sean aceptables para el Propietario, con el único propósito de la instalación, supervisión, mantenimiento y, si así se acuerda posteriormente, la eliminación del sistema de mitigación. Todo los gastos de instalación, supervisión, mantenimiento y, si es necesario, los costos de retirada del sistema de mitigación correrán a cargo exclusivamente del Licenciatario encargado de la obra.

2. No Interferencia. Los derechos de acceso otorgados a los Licenciatarios a través de este Acuerdo se ejercerán de tal manera que en todo momento se minimice la interferencia con el presente y futuro uso y disfrute razonable de la Propiedad por parte del Propietario.

(a) Los Licenciatarios representan que llevarán a cabo sus actividades con el debido respeto por la necesidad de minimizar la interferencia del Propietario en su uso y disfrute de la Propiedad

(b) Mientras estén en el lugar, cada Licenciatario deberá mantener la Propiedad libre de acumulación de materiales y será responsable de la eliminación de las herramientas, equipo, materiales excedentes y basura.

(c) El Propietario no deberá mover, alterar, manipular o dañar material alguno o propiedad personal de los Licenciatarios. Si surgiera la necesidad de eliminar cualquier material o propiedad personal de la Propiedad, el Propietario notificará a los Licenciatarios y solicitará que los materiales o bienes personales sean retirados.

3. Terminación. El Propietario puede terminar este Acuerdo en cualquier momento mediante notificación por escrito a los Licenciatarios. De lo contrario, este Acuerdo terminará cuando la EPA determine razonablemente que el sistema de mitigación ya no es necesario en la Propiedad.

4. Restauración. Si el Propietario decidiera que el sistema de mitigación hubiera de ser desmantelado, cada Licenciatario deberá, asumiendo todos los gastos, retirar cualquier material y

equipos en la Propiedad y restaurar la Propiedad lo más cerca posible a su estado previo antes de las actividades de instalación del Licenciatario.

5. Notificación. El Propietario notificará a los Licenciatarios inmediatamente de cualquier daño o mal funcionamiento en el sistema de mitigación.

6. Garantía del Propietario. El Propietario garantiza y representa que él/ella, tiene la autoridad para firmar este Acuerdo que otorga acceso a los Licenciatarios para realizar trabajos de instalación, supervisión, mantenimiento y retiro del sistema de mitigación y, en su caso, que el Propietario ha notificado a todos los residentes o arrendatarios impactados de la Propiedad y asegurado todos los Acuerdos necesarios para residentes o arrendatarios impactados.

7. Disposiciones Varias.

(a) Elección de Leyes. Este acuerdo se regirá y se interpretará de acuerdo con la ley federal y, en su caso, las leyes del estado de California.

(b) Naturaleza del Acuerdo. Este acuerdo no transmite ninguna propiedad o interés en la Propiedad a los Licenciatarios ni a cualquier otra persona o entidad.

(c) Acuerdo Completo. Este Acuerdo constituye el acuerdo completo de las partes en relación con el tema presente y reemplaza cualquier y todas las propuestas anteriores o contemporáneas, negociaciones y representaciones de las partes. Este acuerdo no puede ser enmendado o modificado excepto por escrito y firmado por las partes de la misma manera que en este Acuerdo. Este Acuerdo puede ser ejecutado en varias contrapartes, cada una de ellas será totalmente eficaz como original, constituyendo cada una de las cuales el mismo y único instrumento.

Y PARA QUE ASÍ CONSTE, las partes presentes han ejecutado este Acuerdo en la(s) fecha(s) indicadas a continuación con sus respectivas firmas.

PROPIETARIO(es)[1]

Firma:_____

Nombre:_____

Titulo: _____

Fecha:_____

Firma:_____ (signatarios adicionales, en su caso)

Nombre:_____

Titulo: _____

Fecha:_____

[1] Si hay varios propietarios, debe constar la firma de TODOS los propietarios.

AGENCIA DE PROTECCIÓN AMBIENTAL DE LOS ESTADOS UNIDOS – EPA (LICENCIATARIO)

Firma:_____

Nombre:_____

Titulo:_____

Fecha:_____

PHILIPS SEMICONDUCTORS, INC. (LICENCIATARIO)

Firma:_____

Nombre:_____

Titulo:_____

Fecha:_____